QH
95.3
.W516
MOLL

West American Scientist

V. 7 (whole no 62)
Sept. 1891

SMITHSONIAN
MAY 30 1989
LIBRARIES

Wm H Dall c/o
U S National Museum

VOLUME VII. SEPTEMBER, 1891. WHOLE NO. 62.

Division of Mollusks
Sectional Library

THE

West American Scientist.

A popular monthly review and record for the Pacific Coast.

CONTENTS:

		PAGE
First Olive Oil Mill in California	*Frontispiece.*	
New Bombylidæ of the Group Paracosmus	*D. W. Coquillett.*	219
Contributions to West American Mollusca	*C. R. Orcutt.*	222
Lathyrus Splendens	*C. R. Orcutt.*	224
Puget Sound and Alaska	*U. L. Hertz.*	225
Rhododendron Occidentale		226
Indian Method of Preparing Wool and Cotton	*E. Palmer.*	226
Sea Pansies		227
The Loquat		228
The Pomegranate	*C. R. Orcutt.*	229
The Granadilla	*C. R. Orcutt.*	230
Women in Science	*Rosa Smith Eigenmann.*	230
The Rainbow Cactus.—Illustrated	*C. R. Orcutt.*	236
Companionship.—A Poem	*Mrs. E. E. Orcutt.*	239
An Oregon Mouse	*Aurelius Todd.*	240
The Mesquite Bean	*C. R. Orcutt.*	242
The Tent Caterpillar	*S. E. Kennedy.*	244
Editorial		245
Notes and News		246
Library Catalogue		247

SAN DIEGO, CALIFORNIA:

C. R. ORCUTT, Publisher, Cor. Fifth and C Streets.

ORCUTT, CALIFORNIA.

PRICE, 20 CENTS. PER YEAR, $2.00

[Entered at the P. O. at Orcutt, California, as second class mail matter.]

Visit Beautiful Lakeside.

Only 20 miles from San Diego, on the Cuyamaca Railroad, in the El Cajon Valley, where we have very choice land for grapes and all kinds of fruit, from $50 to $75 per acre. LAKESIDE is conceded by all to be the home of the Raisin Grape, Walnut and French Prunes. Fine deep soil for Walnuts, and only 8 to 12 feet to water.

Lakeside Hotel

IS THE FINEST Country Resort in Southern California, costing over $60,000 Its appointments are first-class, the table is supplied with all the delicacies of the season. "All the Comforts of a Home" is their motto. Good schools, store, post-office, etc. Two trains a day to San Diego. You have all the advantages of living in the city, as you arrive in the city at 8 o'clock and leave at 5 p. m , attend to business all day and be with your family at night.

A MAN CAN MAKE a good living raising Potatoes, Vegetables and Strawberries (yes, he can make money) on ten acres of this choice bottom land by planting between his trees for three to five years, while they are coming into bearing. Buy ten acres, set it out to Walnuts and French Prunes, raise potatoes, vegetables, etc., and be healthy and happy for five years and rich in ten years.

WE SELL EXCURSION TICKETS to Lakeside (El Cajon Valley Land Co.) good for three days, and furnish free carriage to inspect our lands. Tickets free to those who buy land. Do not fail to see Lakeside before buying Fruit, Walnut, Grape or Orange Land.

STEVENS & JOSSELYN,

AGENTS.

951 SIXTH STREET.

Immediate Payment.

NO OTHER life insurance company in the world pays death claims as promptly as does THE PACIFIC MUTUAL.

The first money received by dependents after the death of their bread-winner is the most valuable. That THE PACIFIC MUTUAL'S "immediate payment" provision is appreciated, the following selected from many, plainly shows:

FRESNO, Cal., November 15, 1889.

Col A. B. Covalt, Resident Agent of the Pacific Mutual Life Ins. Co. of California:

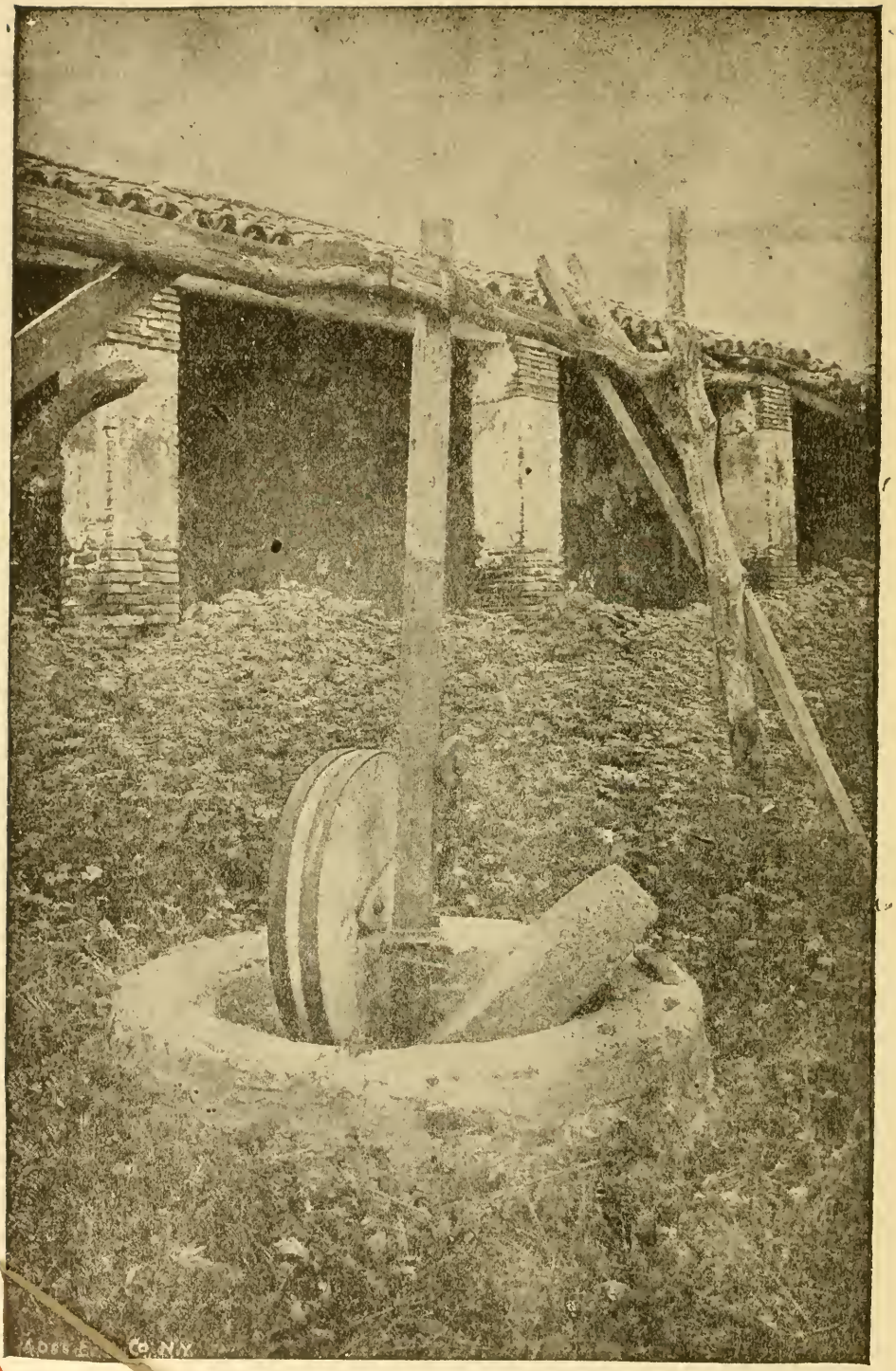
I hereby acknowledge receipt of the company's checks for $10,000, and $947.15 additions, which was earned by one of the $5,000 policies, in payment in full of both policies of J. H. Hamilton, deceased. The final proofs were received at home office yesterday, the 14th, and this morning you hand me check for full amounts, without discount. Such promptness should recommend this company to all persons desiring life insurance. Many thanks for kindness and promptness in payment. I can cheerfully recommend Colonel Covalt and his Company for promptness and fairness in dealing.

ALEX. GORDON,
Adm'r of Estate of J. H. Hamilton.

To the above should be added, that although insured in several life companies, THE PACIFIC MUTUAL paid its policies from two to four weeks earlier than any other. As it is well known that ready funds are the most telling where large property interests are to be protected, the value of the *truly* immediate-payment plan of THE PACIFIC MUTUAL cannot be overestimated.

J. C. SPRIGG, JR. & CO., AGENTS.

OFFICE, COR. SIXTH AND F STS.



First Olive Oil Mill in California.

NEW BOMBYLIDÆ OF THE GROUP PARACOSMUS.

Among the Bombylidæ having a short proboscis is a small group of insects in which the body is elongated and nearly naked, being entirely destitute of flattened scales and of stout bristles, while the hair is so very short and sparse as to be scarcely discernible with the naked eye. To this group belongs our only described genus, Paracosmus Loew, containing two described species, Edwardsii Loew, and Morrisoni Osten Sacken. I have collected three other species belonging to this group. One of these, to which I apply the generic term Amphicosmus, differs from all the others in having three, instead of only two submarginal cells in each wing; the structure of the antennæ and the course of the second vein of the wings are the same as in Paracosmus. Another species differs from Paracosmus in the structure of the antennæ, in the course of the second vein, and in that the ocellar tubercle is situated much farther forward upon the front; to this form I apply the generic term Metacosmus. This form is known to me only in the female sex. The third species agrees with Paracosmus in the course of the second vein and in the situation of the ocellar tubercle, but the tip of the third antennal joint is rounded instead of being truncated; still I am unwilling to found a new genus on so trivial a character as this, but prefer to place this species in the genus Paracosmus, at least for the present. I will now give a more extended characterization of these three new forms.

Amphicosmus n. gen. Body elongated, nearly naked, destitute of flattened scales and of stout bristles. Head subglobular, front in profile gently convex, not greatly projecting at base of antennæ; face scarcely one-fourth as long as the front, projecting farther forward than the latter, with which it forms an obtuse angle. Antennae somewhat approximate at base, about one-fourth as long as the head, first two joints subequal in length, together slightly shorter than the third; the latter tapers but slightly towards the apex which is obliquely truncated, the upper angle prolonged in a short tooth, the lower angle broadly rounded. Proboscis not projecting beyond the oral margin, labellæ well-developed; palpi slender, clavate at the tips, slightly over one-half as long as the proboscis. Eyes narrowly separated in the male, very widely separated in the female. Ocellar tubercle close to edge of occiput. Scutellum rounded behind. Abdomen much narrower than the thorax, seven-segmented in both sexes; male genitalia exposed and very large. Wings with three submarginal and four posterior cells, all of the latter open, as is also the anal cell; bifurcation of second and third veins occurs before base of discal cell; tip of second vein curving

forward and meeting the costa at right angle; costa of male destitute of small points; small crossvein beyond middle of disacl cell. Tibiæ destitute of terminal spurs, pulvilli pad-like, empodium wanting.

Amphicosmus elegans n. sp. Male. Black. Front (except on the vertex) and sides of face whitish pollinose and short sparse white pilose, middle of face bare, shining black; posterior half of the oral margin whitish. Antennæ wholly black, the first two joints sparse white pilose. Occiput white pollinose. Thorax short sparse white pilose, marked with two white pollinose stripes which extend from the front end to a point slightly beyond the middle; a large white-pollinose humeral spot extending to the root of each wing, and a smaller spot on the pleura above the hind coxæ. Scutellum, short sparse white pilose, destitute of pollen. Abdomen with hind margin of the first segment white, of the second segment and sides and hind margins of the third and fourth segments reddish; pile of abdomen very short, sparse, white; venter reddish in the middle, the base and apex black. Femora black, the base and apex yellowish; tibiæ yellowish, the apex black; tarsi black, the base more or less yellowish. Wings wholly hyaline. Halteres wholly white.

Female same as the male with the following exceptions: Front in the middle, and upper portion of occiput destitute of pollen; lower part of front, sides of face broadly, and entire oral margin, white, as is also the lower part of the occiput next the eyes. Thorax destitute of the two white pollinose stripes which occur in the male. Abdomen with the second, third and fourth segments wholly reddish, the hind margins of the fourth, fifth and sixth segments narrowly bordered with white, the end of the seventh segment broadly yellow. Femora largely or wholly yellowish. Length 4.5 to 7 mm. Los Angeles county, Cal. Two males and two females, in June.

I caught these specimens while they were on the wing, hovering over the ground only a few inches from it among some low herbage. At the time of capturing them I supposed that they were Syrphids belonging to the genus Baccha, to which group of insects they bear a very close superficial resemblance.

Metacosmus n. gen. Body elongated, nearly naked, destitute of flattened scales and stout bristles. Head subglobular, front in profile gently convex, slightly projecting forward at base of antennæ; face less than one-third the length of the front, projecting forward nearly on a plane with the lower portion of the latter. Eyes very large, quite widely separated in the female. Antennæ equal in length to the face, second joint scarcely visible, third joint

over twice as long as the first, gradually tapering to the tip which is blunt and bears several minute hairs. Ocellar tubercle situated nearly midway between the upper edge of the occiput and the insertion of the antennæ. Proboscis not projecting beyond the oral margin, the labellæ very large. Tibiæ destitute of terminal spurs, pulvilli pad-like, empodium wanting. Wings with two submarginal and four posterior cells, all of them open, as is also the anal cell; tip of second vein not curving forward, meeting the costa at an acute angle; second submarginal cell nearly straight along its upper edge; bifurcation of second and third veins occurs before the proximal end of the discal cell; small crossvein beyond middle of discal cell.

METACOSMUS EXILIS n. sp. Female. Head black, anterior portion of oral margin and underside of head behind the mouth, white; front very sparse short white pilose, orbits lightly, face densely white pollinose. Antennæ black. Occiput very short sparse white pilose. Thorax and scutellum polished black, very short sparse pilose. Abdomen polished black, hind margins of segments one to five narrowly bordered with white; abdomen laterally compressed, the posterior end truncated; venter black, hind margin of each segment narrowly bordered with white. Legs yellowish brown, coxæ black, tarsi brownish at the apex. Wings wholly hyaline, small crossvein at last third of the discal cell. Halteres brown, the knobs white. Length 6 to 7 mm. Orange county, Cal. Two females, in May.

These insects I captured about six years ago, resting on the ground in the hot sunshine, but I have never succeeded in obtaining another specimen since that time, although I have repeatedly looked for them.

PARACOSMUS INSOLENS n. sp. Male. Black. Front and face densely white pollinose and very short sparse pilose; eyes widely separated. Proboscis not projecting beyond the oral margin, labellæ very large. Antennæ with first two joints subequal in length, together slightly more than one-half as long as the third, the latter compressed, broadly oblong in profile, rapidly tapering to the tip which is blunt but not distinctly truncated. Occiput bare in the middle above, elsewhere densely white pollinose. Thorax sparsely white pollinose, a stripe of white pollen above the coxæ. Scutellum with a stripe of white pollen at its base. Abdomen with hind margins of segments one to six bordered with white, becoming less extended on each succeeding segment, sides of first segment with a cluster of white pile; in certain lights a large portion of the abdomen appears to be white pollinose; venter lightly white

pollinose. Tibiæ with the extreme base yellowish; pulvilli very large, whitish. Wings wholly hyaline, small crossvein at or slightly beyond the middle of the discal cell; tip of second vein curving forward and meeting the costa at an obtuse angle. Halteres brown, the knobs light yellow; in front of each is a dense cluster of white pile. Genitalia consisting of a globular lower piece surmounted by a narrow shield-like piece which on either side is prolonged backward into two quite long and rather broad processes truncated at their tips, the latter curving toward each other. Length 3.5 to 4.5 mm. Los Angeles and San Diego counties, Cal. Eight males, in May and June, resting upon the bare ground in the hot sunshine.

This species will be readily distinguished from the other two described species by the color of the legs, as well as by the rounded tip of the third antennal joint. *D. W. Coquillett.*

CONTRIBUTIONS TO WEST AMERICAN MOLLUSCA.—I.

In this series of papers it is intended to present in connected form stray notes on the mollusca of the Pacific Coast, with bibliographical references, and especial attention to geographical distribution. In this first contribution we have to enumerate various new species founded by my friend, Dr. R. E. C. Stearns, in a paper published in the Proceedings of the United States National Museum (xiii. 205–225), entitled 'Descriptions of new West American land, fresh-water and marine shells, with notes and comments.'

HELIX (ARIONTA) COLORADOENSIS Stearns, Proc. U. S. Nat. Mus. xiii. 206, pl. xv. figs. 6, 7, 8. Grand canyon of the Colorado, opposite the Kaibab plateau, at an elevation of 3,500 feet. Allied to H. remondi.

HELIX (ARIONTA) MAGDALENENSIS Stearns, l. c. 208, pl. xv. figs. 11, 12, 13. Magdalena, Sonora, Mexico. Allied to H. rowelli.

HOLOSPIRA SEMISCULPA Stearns, l. c. 208, pl. xv. figs. 1, 4. Near San Carlos, Chihuahua, Mexico. Closely allied to, if not a variety of H. coahuilensis.

HOLOSPIRA ARIZONENSIS Stearns, l. c. 208–9, pl. xv. figs. 2, 3. Dos Cabesas, Arizona.

MELANIA (?GONIOBASIS) ACUTIFILOSA Stearns, l. c. 211, pl. xv. fig. 9. Eagle Lake, California, at an altitude of 5,115 feet.

CYCLOTHYCA Stearns, l. c. 212. New subgenus of Capulus, with C. corrugata for type.

CYCLOTHYCA CORRUGATA Stearns, l. c. 212, pl. xv. figs. 5, 10. From west coast of Nicaragua.

MITRA (?COSTELLARIA) NODOCANCELLATA Stearns, l. c. 213, pl. xv. fig. 14. Gulf of California.

VENERICARDIA BARBARENSIS Stearns, l. c. 214, pl. xvi. figs. 3, 4. Off Santa Barbara islands, California, in green mud at 276 fathoms depth.

VENERICARDIA BOREALIS Conrad, Am. Con., 39 (with fig.); Stearns, l. c. 215, pl. xvi. fig. 8; Gould, Inv. Mass.; Arcturus rudis Humphrey MS.; Cardita vestita Deshayes. Circumpolar.

VENERICARDIA VENTRICOSA Gould. Stearns, l. c. 216, pl. xvi. figs. 5. 6. Puget Sound.

MIODON PROLONGATUS Cpr., *Annals and Magazine of Natural History*, 3d ser., xiv. 424; Stearns, l. c. 217, pl. xvi. figs, 7, 9. Neeah bay, and Middleton island.

LUCINA ÆQUIZONATA Stearns, l. c. 220, pl. xvii. fig. 34. Off Santa Barbara islands, California, in green mud at 276 fathoms depth.

VENUS (CHIONE) EFFEMINATI Stearns, l. c. 221, pl. xvii. figs. 1, 2. Panama bay.

PERIPLOMA DISCUS Stearns, l. c. 222, pl. xvi. figs. 1, 2. San Pedro, Long Beach and vicinity, Los Angeles county, California.

PERIPLOMA ARGENTARIA Conrad, *Jour. Phila. Acad. Nat. Sciences*, vii. pt. II (1837), 238, pl. 18, fig. 8; Stearns, l. c. 223, 224. Dr. Stearns treats this as synonymous with P. PLAIUSCULA Sby.

PERIPLOMA PLANIUSCULA Sby., Proc. Zool. Soc. London, 1834, p. 87; P. argentaria Conr., l. c.; P. alta C. B. Adams; P. Centicularis Sby.; P. excurva Cpr.; P. excurvata Cpr., British Ass. report, 1856, p. 287. Synonymy as given by Stearns, l. c. 224. Pacific coast south of Point Conception.

?PERIPLOMA PAPYRACEA Cpr., Proc. Zool. soc. London, 1856, p. 229. Stearns (l. c. 224), mentions this as a West American species belonging to Carpenter's Mexican and Panamic province.

HELIX (ARIONTA) CARPENTERI Newc. variety INDIOENSIS L. G. Yates, Nautilus, iv. 63 (also p. 51); Orcutt, Nautilus, iv. 67. Indio, San Diego county, California, in the Colorado desert region. Dr. Yates bases this variety on specimens collected by Dr. Stephen Bowers. Specimens collected in the same vicinity by the writer I have referred (Orcutt, l. c.) to H. Traskii, of which I consider it to be a well marked variety. Dr. Stearns (l. c. 206) refers to H. carpenteri as a synonym of H. remondi, so that Dr. Yates' variety will have to be referred to that, or a related species.

HALIOTIS RUFESCENS Swains. Hemphill, Nautilus, iv. 59; Orcutt, l. c. 67. The geographical range is quoted as from Mendocino county to San Nicholas island, California, and Santo Tomas landing, Lower California.

CYPRAEA (LUPONIA) SPADICEA Cpr., Nautilus, iv., 54, 71. The Santa Barbara channel is given as the most northern station yet recorded for this species. Seventy-five fine living examples are reported as found in one day some 15 or 18 miles northwest of Santa Barbara. Point Concepcion, forty miles north, is suggested as possibly its northern limit. Miss Ida M. Shepard (Nautilus, July, 1890) records it from near Long Beach, Los Angeles county.

BYTHINELLA HEMPHILLI Pilsby, Nautilus, iv. 63. Near Kentucky ferry, Snake river, Washington. Allied to B. aldrichi.

C. R. Orcutt.

LATHYRUS SPLENDENS.

(From *Vick's Magazine*, xiv. 220.)

California has doubtless furnished a greater variety of lovely wild flowers and beautiful plants that have gracefully yielded to cultivation than any other State in the Union. Annually new members of her floral circle win their way into our gardens and a permanent place in our affections. One of these latest introductions, known for years among the simple mountain people of Southern California as the 'Pride of California, has become widely recognized as well worthy of the name.

This is the deep rose-red to crimson flowered perennial pea, Lathyrus splendens, named many years ago by one of the charter members of the California Academy of Sciences, Dr. Albert Kellogg, whose memory is held in reverence by those who knew his pure life. For many years after this handsome vine had received its name it was completely lost sight of by botanists, until its very existence was doubted, and in the great work on the flora of California (Watson's Botany) was treated as a synonym.

In the spring of 1882, a party of several botanists, including the late Dr. C. C. Parry, started from San Diego to explore the then little known peninsula of Lower California. Just below the line, in a rocky canyon, we discovered this magnificent flower ornamenting the evergreen bushes along the watercourse with its graceful and brilliant blossoms. Dr. Parry at once shouted, it is Kellogg's Lathyrus splendens, and such it proved to be.

Many times since have I seen it clambering over the bushes on the higher table lands of Lower California, beside some perennial stream, or bordering a dusty highway. In the mountains back of San Diego, this year (1890), it was one of the few wild flowers that had 'watched the old year out and the new year in.' It was in its

greatest splendor in April, when the bushes for miles and miles were heavily loaded with its showy blossoms; on the 15th of June I plucked evidently the last cluster of the season.

The beloved botanist, Dr. Asa Gray, had the pleasure of admiring and picking this flower in our garden, on his last visit to California. Though Dr. Parry, at the time of its rediscovery in 1882, introduced it to the attention of European horticulturists, by whom it was well received, it was not until last year that this, the loveliest vine in the west, received attention in America.

It is considered hardy, blossoming the second season from the seed, forming a strong vine, capable of covering a veranda or arbor. Dr. Parry, after seeing it covering a porch in San Diego with its luxuriant foliage and profuse blossoms, pronounced it the handsomest plant in the West. Well may it be called the pride of the two Californias—Upper and Lower—and a fit representative of two republics. *C. R. Orcutt.*

PUGET SOUND AND ALASKA.

Nearly all the shores of Puget Sound are about alike. Wooded, rolling back to the mountains, they form a setting to a rather nice scenery. The height from the water's edge to the top of the bluff varies from a few feet to a hundred. Every where you see evidences of a vast glacial drift, composed of round pebbles, boulders and sandy loam. The general color of soil is reddish yellow. On top of this grows the gigantic firs, two to three hundred feet high. At Snohomish City, Wash., there is a cut in the railroad that is lined with marine fossils, Cretaceous, I believe. There are clams, razor shells, mussels, worm cases and tubes, and a trace of coal is found, also some broad leaves resembling flags. This cut is about 200 feet above Puget Sound, and the same shells are found there today. The coal fossils at Wilkerson are known and described. Coal is found plentifully, adjacent to the sound, and iron further back. The journey to Alaska should be taken by every naturalist that can do so. Its glaciers, mountain peaks, broad rivers and other novel features should be seen. The Treadwell gold mine, well known as one of the largest and richest in quantity of ore is opened in the side of a high hill. The ore is low grade, but easily got out and pays well. The fauna of this country is very interesting and varied. Black bear have been shot from the steamers' decks, going through the Narrows. The glaciers, probably because they break off in the bay, cannot be surpassed in beauty and size. *U. L. Hertz.*

RHODODENDRON OCCIDENTALE.

This beautiful flowering shrub extends from Oregon southward throughout California, to the mountains of San Diego, but has not as yet been reported from Mexican territory. It grows from two to sometimes twelve feet high, rarely more than six feet, however, and covers the hillsides and tangled meadows of the sierras at from three to six thousand feet altitude.

In its magnificent display of flowers during June and July it defies description, surpassing the finest oleanders and azaleas in its beauty and profusion. Its masses of beautiful and fragrant flowers are showy and attractive, the hundreds of flowers, two to three inches in diameter, completely covering the bushes for weeks at a time.

The flowers are white, or commonly rose-tinged, variegated by a pale yellow band. The shrub is of easy cultivation in rich moist soil, and should receive treatment similar to our better known garden azaleas. Although deciduous, it is worthy of attention among ornamental plants on the Pacific Coast. 'Like the oleander the plant is poisonous if eaten by children or animals, but no bad effects ever result from handling it or using the flowers.'

INDIAN METHOD OF PREPARING WOOL AND COTTON.

It was my misfortune to be sick with intermittent fever, in October, 1870, at the village of Achiabampo, Sonora, on the Gulf of California. The village of Achiabampo has two distinct divisions, one inhabited by Mexicans, the other by Indians. The Indians will trade with and work for the Mexicans, but will not allow their houses to be near the habitations of Mexicans. There was but one hotel in the village, kept by a Mexican, at the edge of the Mexican part and near the Indian portion of the village.

During my convalescence I was interested in watching what transpired in the Indian quarters, and particularly in observing their method of preparing wool. The method was the same as applied to cotton by Indians on the Atlantic side of Mexico, which I had previously seen.

An Indian's blanket by day serves him as an overcoat, by night for cover, and wool is to him of great importance. He is willing to bestow much labor upon its preparation.

I am of the opinion that the method of preparation is of ancient origin, though wool was unknown to the Indian before the advent

of the Spaniard, since these same people, I was informed, clean cotton in the same manner, some growing cotton in their fields, or buying from other Indians and Mexicans.

In the preparation of wool a small hide is placed in a convenient place on the ground, with something beneath its center to raise it a few inches from the ground. The wool is, of course, previously washed and now placed in the center of the hide. The operator—a woman—takes a kneeling posture and proceeds to thrash the wool with a long, well seasoned stick, strong and slightly larger in the center than at the ends.

With each measured stroke the stick is brought low by the right hand while the left hand is brought in contact with the wool, the thumb and finger encircling the stick, which is withdrawn through the left hand, thus preventing the wool from scattering during the thrashing process. It is a slow process, but these patient people are equal to the task and the wool is brought into the same condition as if prepared by machinery.

In the preparation of cotton, the Indians have first the slow and tedious task of separating the seeds by hand, before submitting the cotton to the slow, measured strokes of the Indian lady who represents the Indian cotton gin. The steady measured stroke and the withdrawal of the stick through the left hand prevents the scattering of the lint, which one who has not seen the operation might expect.

Slow as the process is, it has for many years answered the requirements of these people, and by patient labor they are enabled to accomplish much in a single day.

To a stranger it is an interesting sight to watch these simple people prepare their wool and cotton for spinning, with only a stick, patience and long experience to bring about the desired results. *Edward Palmer.*

SEA PANSIES.

One of the most beautiful of the organisms on the Pacific Coast is the Renilla amethystina, or sea pansy, as it is very appropriately called. It is really a community of coral-like animals living in a structure somewhat of the size and shape of a pansy flower, with a short stem that further carries out the resemblance.

The color of the main structure is of a rich royal purple, while the jelly-like animals themselves are white, and peeping out from their doorway appear like stars in the firmament of the heavens.

These communities are not rare on our sandy shores, but may

only be found by accident by those who have not learned the secrets of marine life. At low tide they may be found buried in the sands, with nothing to indicate their presence but an imperfectly circular line in the smooth-washed surface of the beach that only a trained eye is likely at first to detect.

If one of these sea pansies is removed from the sand and placed in a dish of sea water, the creatures that form the community will soon manifest life, and reveal a most beautiful structure showing plainly their relationship to the coral 'insect.'

Each individual polyp in the community will be found to possess eight long fringed tentacles around a narrow disk. The numerous individuals of each community are arranged on the upper surface of a flattened cordate fleshy structure, to the lower surface of which is attached a stem like organ, useful alike as a means of locomotion and for the anchorage of the tenement house in the sand.

The sea pansy is a near ally of the sea pens and the sea fans—which latter are branched and resemble beautiful flowering shrubs or plants. The organ-pipe coral belong to the same group of polyps according to some systems of classification. A hundred years ago the corals were all thought to be plants, as they closely imitated almost all kinds of vegetation, but they are now regarded as true animals.

THE LOQUAT.

The loquat, a beautiful evergreen tree native to China and Japan, was first named by Joseph Hooker, Photinia eriobotrya. It has received other names, like P. japonica and Eriobotrya japonica, and is now generally known under the latter name, though the first has priority and there seems no good reason to give it generic rank.

It is perfectly hardy on the California coast, south of Marin county, and may be grown further north if given slight protection.

It has been incorrectly called the Japan plum, but this name has been wisely discarded by California horticulturists who unite in calling it by its proper name, loquat.

It is remarkable for its refreshing fruit, which is elongated in shape, about two inches in length, pale yellow in color, with a very peculiar flavor, 'combining that of the tamarind and pineapple, and is highly agreeable.'

The tree is easily raised from the seed or may be grafted upon its own stock or on the quince. It does not require any particular soil apparently, and at maturity will bear from twenty to thirty

pounds of fruit to the tree. The fruit is in most demand among the Chinese, but when it becomes more generally cultivated and better known it will be in demand among all classes, and will readily bring a good price.

Hitherto the loquat has been mainly planted for ornamental effect as it is a grand bush for scenic effects. The fruit begins to ripen in late spring and continues through several months. The seed forms the larger part of the fruit, and one who eats the luscious pulp only wishes there were more of it and less seed. Seedlings are very variable and a variety with a small seed might be produced and propagated from it by budding to the pecuniary profit of the originator.

The tree seems to be free from insect pests. Photinia villosa is another native Japanese fruit, edible and pleasant, but not yet sufficiently known in this country. The loquat thrives in Santa Barbara, Los Angeles and San Diego counties, in California, and will doubtless do well in Arizona and New Mexico.

THE POMEGRANATE.

One of the most familiar of the mission fruits of California, is the ruby-red fruit of Punica granatum, a shrub native to the north of Africa, and to southwestern Asia, where it extends up the sides of the Himalayas to an altitude of 6,000 feet.

Its value as a hedge plant is great, but this use is often overlooked. As an ornamental evergreen bush it ranks high, its well-known showy habit recommending it to every eye. With its rich colored flowers, and the peculiar, cooling fruit, it is welcome and allowed to flourish in all the older Mexican gardens, and the fruit may be found for sale in our larger markets, mostly being in demand among the natonalities of the south of Europe.

We believe the shrub is grown in Oregon and Washington, but only for ornament.

The bark of the pomegranate contains 32 per cent. of tannin and is used for dyeing the yellow Morocco leather, and the outer rind of the fruit is also used as a dye.

The pomegranate is perfectly at home in Arizona, where it may be found in many gardens. The fruit varies in color from nearly white (inside) to dark ruby red or wine color, the darker fruits when crushed in water making a pleasing drink, like lemonade—the lighter colored fruits not being so sour. The commoner variety in cultivation is of a bright orange color. *C. R. Orcutt.*

THE GRANADILLA.

There are several species of the Passion-flower grown in Mexico for their edible fruit, that are deserving of a trial in California.

The best known species of the granadilla is Passiflora edulis, a native of the southern part of Brazil, which has already been planted in several places in California. The flower is of medium size, whitish with a faint tinge of blue,

It is a strong-growing vine, bearing flowers and fruit almost the year through, the fruit of the size of a small hen's egg, pale purple, useful for making into jelly, when ripe the fruit has an 'acid cooling flavor.'

There are about two hundred species of Passion-flowers recognized, native to various portions of America from the southern United States to Brazil, in South America. Some of the species are exceedingly handsome vines and prized for their magnificent flowers.

One of the most commonly cultivated species of the granadilla-fruit is Passiflora quadrangularis, also a native of Brazil. One species (P. macroptera) produces an edible fruit weighing eight pounds apiece.

May-pops of the southern states is the fruit of Passiflora incarnata. The fruit of P. ligularis has been pronounced as one of the finest fruits in existence.

Many of the tropical species are natives of mountainous regions and will endure our mild temperate climates, and the strong-growing vines, with the curious and beautiful flowers are well adapted for covering various structures and may be rendered both useful and ornamental. But nowhere in the United States do they attain a greater luxuriance than on the Pacific coast. Our national colors are reproduced in the red, the white and the blue flowers of the several rival varieties. *C. R. Orcutt.*

WOMEN IN SCIENCE.

(Read before the Pacific Coast Women's Press Association.)

Women eminent in Science have received more praise for what they have done than is their due. Comparatively speaking, so few women have entered this field of knowledge that when one does accomplish somewhat she is as loudly lauded as the precocious child. But in science as everywhere else in the domain of thought women should be judged by the same standard as her brother. Her work must not be simply very well done *for a woman.*

In the limited time at my disposal today I shall confine myself almost wholly to those whom I have met or whose work more or

less closely touches my own. I shall not, therefore, be at all exhaustive. But I cannot refrain from saying a few words of Mary Somerville whom I believe to have been not only the most eminent woman in Science of her time, but of all time. Her love of science was not the outgrowth of a regard for some person whom she might assist as was the case with her contemporary, Caroline Herschel, and most women who have entered the field of science.

Indeed, love of scientific study, especially higher mathematics, led her to persevere against the wishes of her friends and the popular prejudice against the higher education of women which her first husband shared.

She did not, however, begin to publish until urged to do so by friends who wished her to contribute a volume to the Society for Diffusing Useful Knowledge. In his letter to Dr. Somerville asking if Mrs. Somerville could not be prevailed upon to write an account of Laplace's Mechanism of the Heavens, which should give to the unlearned some insight into this work, Lord Brougham paid her the high compliment of saying that it must be left undone unless Mrs. Somerville would undertake it, as there was none other capable of doing it. At the earnest solicitation of her husband she finally consented to undertake the work. Of it she herself has written: 'Thus suddenly and unexpectedly the whole course of my life was changed. I rose early and made such arrangements with regard to my children and family affairs that I had time to write afterwards; not, however, without many interruptions. A man can always command his time under the plea of business, a woman is not allowed any such excuse.' In this last expression has Mrs. Somerville shown why so few women have become eminent in science. While she was thoroughly a womanly woman devoted to her family, enjoying society and mingling freely in it, fond of the theatre and of travel, she despised the small talk of the gossip, and was one not to indulge in frittering away her time. I must also call your attention to the fact that Mrs. Somerville's second husband, himself a classical scholar and a scientist, had no ambition for himself but chose to assist his illustrious wife in revising her MSS., correcting the proofs and verifying her results—in short, to do for her what most women of ability do for their husbands.

Dr. Maria Mitchell, professor of astronomy at Vassar, has so recently been brought to the notice of everyone at her death that it is not necessary to recount her achievements.

The direct influence of woman upon the natural and physical sciences has been little felt; but indirectly women have done a great deal. First, as helpers of their masculine friends; secondly, by

popularizing science, especially in compiling books for children; and thirdly, by subscriptions in aid of science.

A very large per cent. of those pursuing biological researches have been led into these lines by a course in medicine, and it is rather rare to find a naturalist who may not claim the title of M. D. As women have not been admitted to medical colleges until during the past few years this fact may account very largely for the non-appearance of women's names in the proceedings of museums and scientific societies. It is an almost startling fact that, among the one hundred and fifty contributors to the pages of the proceedings of the United States National Museum during the eleven years of their publication there appear the names of only three women—two on ichthyology, one on mollusca. In the publications of the British Museum I am not acquainted with the papers of any woman, and it is so with most of the scientific societies of foreign lands. The Royal Society, however, is a notable exception, and during the five years between 1882 and '87 four women have published papers on histological subjects in the Royal Society's proceedings.

Several of the western academies of science have women on their membership lists who write for the proceedings of these societies. A notable example is that of the Natural History Society of Wisconsin, which has published a number of contributions to our knowledge of the Attidæ or Jumping Spiders by Professor G. W. and Elizabeth G. Peckham. The work of Professor and Mrs. Peckham is not only descriptive, but they have carried on extensive experiments with regard to the habits of the arachnids.

To Professor and Mrs. Louis Agassiz must the credit be given for placing an entering wedge for women in science not alone for the State of Massachusetts but for the United States as well. In 1873 Professor Agassiz inaugurated a summer school of science on the island of Penikese, in Buzzard's Bay. Here 50 young students gathered, about 20 being women. A few of the young men from some of our eastern universities unused to seeing women in college, entered a protest against their presence at Penikese. Agassiz did not at all share their feeling and at once put a stop to it. Learning who the students were he announced the first morning at breakfast that the launch was then ready at the wharf and certain gentlemen, whose names he called, would leave. No entreaties on the part of both ladies and gentlemen of the school would alter Professor Agassiz's decision. Women were here admitted to the study of nature on equal terms with men.

I have been personally acquainted with six of the women who

were at this island school of Agassiz. The wife of Dr. David S. Jordan, president of the Leland Stanford Junior University, then Miss Susan Bowen was professor of zoology at Mount Holyoke at the time of her marriage. Although Mrs. Jordan's home and social duties took much of her time so that she did not carry on researches independently she was enthusiastic in aiding her husband in his scientific work. She died in November, 1886. Her chair at Mount Holyoke is filled by Professor Cornelia M. Clapp.

Mrs. Fanny Bergen since studying with Agassiz has, with her husband, written a most readable little book on The Development Theory. For the past twelve years she has been an invalid and confined to the room. Notwithstanding this serious drawback to work of any kind Mrs. Bergen has steadily published on scientific topics and her series of papers on Animal Lore which appeared in the *Popular Science Monthly* have been a contribution to science.

Prof. and Mrs. H. H. Straight spent their first days of married life at Penikese, which has been a delightful memory, as it was an inspiration for the two who were already turning to science teaching in the normal school at Oswego, New York. Prof. Straight was later at the head of the scientific department in a school of Illinois, but by exposure and overwork he brought on consumption whereupon Mrs. Straight took his place. At his death she was desirous of continuing the work to carry out the plans her husband had made; but she was appointed to a position in Japan, where, with her two little children, she now is.

Lydia W. Shattuck was the most notable teacher of botany Mt. Holyoke has had, but death has cut short her scientific career.

Susan Hallowell has been professor of botany at Wellesley College ever since her summer at Penikese.

Mrs. Zella Reid Cronyn, now living in Massachusetts, was for some time principal of the public schools of San Diego. She encouraged her pupils to form a cabinet and to study the specimens collected and helped them to found the Historical Society, since merged with the Society of Natural History. Whether most of the women who had the good fortune to be among the number instructed by Agassiz have become teachers of science I do not know. Certain it is that now, after nearly twenty years, they are not prominently known in the world of science. Indeed not one of the number has made so brilliant a reputation as have many of the men, for we count among the most distinguished scientists of America some of those who shared the teaching of him whose genial face and almost magic gift of teaching are known throughout the breadth of his adopted land.

Mrs. Louis Agassiz has contributed to scientific literature in writing jointly both with her husband and son. 'A Journey in Brazil' is very largely the work of Mrs. Agassiz, who accompanied her husband during his entire journey and kept full notes of all that occurred. 'Seaside Studies in Natural History,' a most charming book, was written by Mrs. Agassiz and Dr. Alexander Agassiz. Mrs. Agassiz has also written on natural history topics for children. Her 'Life and Letters of Louis Agassiz' may well be classed with her scientific work. It is so happily written that it is as interesting as a novel, and one lays it down with a kinder feeling for the world.

The island school so auspiciously begun by Agassiz was abandoned after the second year, as the island proved to be too inaccessible. Outgrowths of this famous school of science are the various marine laboratories of the eastern United States, chief among which is the one at Woods' Holl, Massachusetts, first opened to students in June, 1888. The present tendency in biology to investigate the life histories and to study the minute structures of plant and animal life is largely due to the influence of our Grays and Agassiz, and the opportunities afforded at these schools by the sea-shore. Among the women who have been studying at Woods' Holl during the three summers this laboratory has been open I may mention the following: Professor Cornelia M. Clapp, of Mount Holyoke College, who was also at Agassiz's Penikese laboratory, has spent every summer at Wood's Holl. She prepared her material for study during the first summer and is now writing her paper On the Lateral Line of Batrachus tau, one of the toad fishes. Miss Platt, a student at Bryn Mawr, formerly of Harvard, last summer at this laboratory was studying the development of the brain of the shark. She has gone to Germany to continue her investigations. Miss Marcella I. O'Grady, a professor at Vassar, was working on the problem of Kupfer's Vesicle. Miss Randolph is now in Germany; at Woods' Holl she was studying the embryology of Spirorbis.

Science is exacting, requiring the devotion of months and even of years to the completion of a series of observations which, sometimes, must be carried on with little or no interruption; therefore we much more often find women popularizing the results of students of science, rather than adding to the positive knowledge of the world by studies and researches of their own. So many women have written popular books on natural history, especially for children, that I shall not attempt to name them.

There is the tendency at present for women to work out for themselves problems in the physical world independently of their

brothers and husbands which is no doubt due to the training in our higher universities which young women now receive almost, or quite as fully as young men. The school for the collegiate instruction of women at Cambridge, generally known as the Harvard Annex, gives to women as full advantages in scientific study and research as to men, except in the department of cryptogamic botany. Three or four of these Harvard women, if I may so term them, are now preparing papers embodying the original research of several years—Miss Henchman and Miss Platt in the department of animal morphology, and Miss Reul in botany.

Although women, as a usual thing, have not pursued long continued researches in science, they are furthering the progress of science very largely by bequests and special funds. Indeed, I do not know but they are doing more in this way than men. Professor Goodale, of Howard, conducts a large botany class of Boston women. Some of them in their zeal contributed so largely to that department of Howard College that it was possible to push to completion the museums and laboratories of botany as otherwise would have been out of the question.

In 1881 a marine biological laboratory was established at Anisquam, Mass. This was the work of women of Boston. Afterward it was thought best to establish another at Woods' Holl, but during the winter of 1887-8 these women were instrumental in organizing a lecture course in science in aid of the laboratory. They were eminently successful, and in June, 1888, the Marine Biological Association opened the doors of the new laboratory to students. I have already given some account of the women who have studied here during the past three summers, which, like the earlier Penikese school, is open to both sexes. However, as might be expected, a larger number of men avail themselves of the unequalled advantages of the place. There have been attracted to it the most prominent biologists of America, professors and teachers of science whose reputations are already established, finding here not only unexcelled facilities for prosecuting their investigations during the summer vacation, but also the opportunity to confer with their colleagues. Thus has this work of women—the Woods Holl Biological Laboratory—been of paramount importance to science.

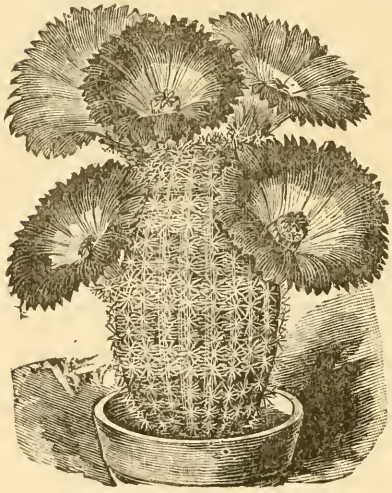
Mrs. Thompson, of Stamford, Conn., has created the Elizabeth Thompson Science Fund 'for the advancement and prosecution of science in its broadest sense.' The fund now amounts to $26,000. The income from this amount is annually distributed by the trustees of the fund to applicants who are making scientific investigations irrespective of the country wherein they are carried on, the

foreigner, then, having an equal chance with the American naturalist. 'This endowment is not for the benefit of any one department of science, but it is the intention to give the preference to those investigations which cannot otherwise be provided for, which have for their object the advancement of human knowledge or the benefit of mankind in general, rather than to researches directed to the solution of questions of merely local importance.' About 30 grants for specific purposes have been made from this fund to investigators in various parts of the United States, in England, Scotland, Germany, Italy and Canada. The investigations were in meteorology, chemistry, physics, medicine, psychology, paleontology, physiology, entomology, zoology, astronomy, history and cooking. Only one of these grants is for investigations by our own sex, and that one is $300.00 for experiments on cooking. *Rosa Smith Eigenmann.*

THE RAINBOW CACTUS.

(From the Rural Californian, xiv, 261.)

The Echinocereus candicans of American catalogues is certainly one of the most beautiful of the many varieties of cacti now known in cultivation. In beauty of spines and brilliancy of flowers it can scarcely be surpassed or even equalled by any known species. The plant is three or four inches in diameter and from a few inches to probably more than a foot in height. Plants in my possession are five inches high and about four inches in diameter. The plant is closely enveloped by a network of stiff spines borne on the twenty or more narrow ribs of the plant, in clusters of twenty or more. The spines range in color from an ivory whiteness to deep crimson, the colors alternating in rings around the plant and thus giving origin to its popular name of the rainbow cactus.



RAINBOW CACTUS.

It blooms profusely—a plant six inches in height often bearing a dozen flowers, and each flower measuring from three to five inches

across. The flowers are of a bright crimson, shading to white toward the center. Its culture is easy, as is the case with most cacti.

It is a native of the southeastern part of Arizona and Sonora, Mexico. The spines are said to be in individual plants at times wholly white, and again, all the spines on a plant will be of a blood red or crimson color.

The true Echinocereus candicans, Gill, is a native of the region of La Plata, South America, and when young is of a globular form like an Echinocactus, closely covered with very long spines. Our rainbow cactus has been described by Dr. Engelmann under the name of Cereus pectinatus var. (?) rigidissimus, but it seems to the writer as worthy of specific rank. The following detailed descrip-

C. PECTINATUS.

tion is subjoined: Plant ovate-cylindrical; ribs 20 to 22, slightly interrupted; areolae linear-lanceolate, crowded on the ribs, somewhat woolly when young; spines all radiating, interwoven, recurving from the bulb-like base, awl shaped, very sharp, rigid, white, yellow or red, pellucid; lateral spines long, stout, 12 to 16 in number; the lower spines short, upper ones 3 to 6, bristly, shorter, fasciculate. Flowers produced from the side of the plant beneath the summit; ovary with 50 to 60 clusters of small rigid spines; sepals forming a tube, 60 in number, the 40 inferior ones subulate, the upper 20 lanceolate-acuminati; petals under 20 in number, purple; stigmata less than 12, green; fruit ovate to globose, spiny; seeds tuberculated. From Sonora and Arizona. Differs from C.

pectinatus mainly in its larger and more robust growth, in the absence of central spines and the rigidity of the long radial spines, one fourth to one half inch long.

CEREUS PECTINATUS Engelmann.—Plant ovate-cylindrical; ribs 18 to 23; areolae lanceolate; radial spines 16 to 20, subrecurved, pectinated, tips rosy; central spines, 2 to 5, short; flowers purple with 60 to 70 clusters of 10 to 15 rigid spines on the ovary. The flowers are two to three and a half inches across and very fragrant—one flower is said to scent a whole house. The plant is of cespitose growth as shown by the illustration and one cluster will bear a large number of flowers in a single season. Single plants will often bear a dozen or fifteen flowers, and four or five may open in one day.

CEREUS CÆSPITOSUS.

VAR. ARMATUS POSEL.—Ribs 15 to 16; radiating spines 16 to 20 with a single central spine longer than the rest. This variety is described from Monterey, Mexico, and is little known. Engelmann was in doubt as to whether it was a form of this species or of C. caespitosus.

VAR. RUFISPINUS is a horticultural variety with beautiful pink spines, otherwise probably not different from the typical form.

VAR. ROBUSTUS of Sonora and Arizona is another horticultural name for the rainbow cactus, for which Engelmann's name should receive preference.

Cereus pectinatus, and C. caespitosus also, are often grafted on Cereus grandiflorus, presenting a rather curious appearance. They are much more beautiful, however, in their natural condition, and there is nothing to be gained by the grafting process except an oddity and an unnatural growth.

CEREUS CAESPITOSUS Engelmann.—A near relative to the preceding in this small but beautiful plant. One of the most profuse bloomers and in itself a perfect gem, it is not strange that the plant is a general favorite wherever introduced. It will retain vitality for a year without roots or potting. It seldom exceeds six inches in height, but when scarcely an inch high has been known to bear four large purple flowers at a time!

Plant cespitose, ovate-cylindrical; ribs 12 to 18; areolae lanceolate; radial spines 20 to 30, straight or slightly recurved, pectenated, white; central spine rarely present, when present very short. Tube of the flower purple, 80 to 100 clusters of 6 to 12; fine hair-like spines on the ovary.

VAR. MINOR Engelmann, spines short, flower small.

VAR. MAJOR Engelmann, spines long, flower large.

VAR. CASTANEUS Engelmann, spines red or chestnut color.

This species inhabits Texas and northeastern Mexico as far south as Monterey, and is now common in cultivation.

Cereus adustus, C. infispinus and C. longisetus are other red-flowered species of Cereus found in the United States, and belonging to this section of the genus. By some authors these species are placed in a separate genus, Echinocereus, but the writer prefers for the present to treat them as constituting only a sub-genus of Cereus.

C. R. Orcutt.

COMPANIONSHIP.

'He that walketh with wise *men* shall be wise, but a companion of fools shall be destroyed.' Prov. 13: 20.

'Tis said in tales of orient lands,
The very soil exhales
The dainty fragrance of the rose,
Whose bloom there never fails.

Oh, if from the unconscious clod,
Where beauty weaves its bower,
Ambrosial air shall sweetly spring,
To honor thus a flower;

How wide the power of mind oe'r mind,
And blest are they who know,
The fragrant paths where wise men walk,
And with them wiser grow.

More than in classic groves to stray,
The presence of wise friends,
Sweeter than Asian sweet waters,
The blessing that descends.'

—Mrs. E. E. Orcutt.

AN OREGON MOUSE.

Frederick W. True has recently described a new species of mouse in the Proceedings of the U. S. National Museum (xiii, 303-4), from a specimen sent by the writer to the Smithsonian Institution, to which the name Phenacomys longicaudus has been given. The following description of this interesting animal is taken from Mr. True's paper:

Size moderate, about equalling that of Hesperomys leucopus. Ears moderate, nearly concealed by the surrounding fur. Hind foot not relatively longer than in the other species of the genus. Tail long; with the hairs, equal to the body in length.

Color above nearly uniform bright rusty brown; only the tips of the hairs are of this color, the remainder being dark plumbeous. Mixed with the brown-tipped hairs are numerous longer black hairs. Under surfaces white, slightly tinged with rusty brown, especially on the abdomen. The hairs of the throat are white to the base, but elsewhere they are only tipped with light color, the lower portions being plumbeous.

The tail is dusky chocolate-brown above and below. Fore feet brown, like the upper surface of the body; toes more or less dusky. Hind feet similar, but the toes more dusky. A spot on the outside of the metatarsus lighter than the rest of the foot. A portion of the whiskers dusky, the rest whitish. Nose dusky.

Measurements. (Dry skin No. $\frac{19071}{25383}$, type).—Total length, 148^{mm}; tail, with hairs, 62^{mm}; hind foot, 20.2^{mm}; ear from behind, 4.6^{mm}.

The skull belonging to the type is badly broken, and it is only possible to give the dimensions of some of its parts.

Measurements of the skull.—Length of the crowns of the upper series of molar teeth, 5.8^{mm}; lower molars, 5.7^{mm}; length of nasal bone, 6.6^{mm}; breadth of interorbital construction, 2.8^{mm}.

The molar teeth resemble those of P. intermedius, but the lozenges are narrower, and the external re-entrant folds of enamel in the upper molars are directed less backwards and those of the lower molars less forwards than in that species. The molars are rooted. The skull is that of a youngish individual.

Regarding the habits of this mouse, I would say that it seems to be almost exclusively arboreal, having only been taken, so far as I am able to learn, in the branches of the Douglas spruce. The type specimen was sent me from Marshfield, Coos county, Ore., by a friend, L. J. Cornelius, of Siuslaw River, who had shown me a nest of this, built about 60 feet from the ground in a small clump of

leaves and twigs, on a limb some six inches in diameter and about six feet from the body of the tree. On felling the tree about a year before he had captured one, which unfortunately had not been preserved. Of course I requested him to obtain one for me if possible, with the result that last summer, while in Coos county, he secured the specimen on which the species is based.

My first discovery of this animal was in June, 1886, in the valley of Elk Head, on the head waters of Elk creek, a tributary of the South Umpqua river, and some seven miles east of Voncalla, Douglas county, while out looking for birds' nests. I saw a nest which I took to be an old bird's nest, on the upper side of a branch in a clump of twigs some thirty feet from the ground. On throwing a stick at it to ascertain its character, I was surprised to see a mouse run out of it upon a twig, where it stopped. I threw again and succeeded in dislodging the little fellow, which, on capturing, I at once recognized as something new. I kept it for some time alive, secured the nest, and soon after sent it, with measurements, to the Smithsonian Institution, but unfortunately the package was lost, and I failed to secure another until the one described by F. W. True. I have, however, found their nests down Elk creek, along the Coquelle river, in Coos county, in southern Douglas county, and also on the upper Willamette tributaries, in Lane county, and believe it will yet be found in Washington and perhaps through the whole of the northern Pacific coast.

The nest is a novelty in itself, being about the size of a robin's nest, and built after the usual manner of mice in shape, but almost exclusively of the leaves of the tree in which it lives, which are split into threads from end to end, forming very slender filaments, seldom broken, and each leaf is frequently split twice or more, making from two to four threads of each leaf. These threads are soft, dry and apparently warm, and they show much ingenuity in the general make-up of the whole nest. Rarely has a few unsplit leaves, moss and twigs on the outside of the nest been found.

For some reason which I have not been able to discover, these nests seem to be frequently changed or deserted, from the fact that we frequently find in the woods and under lone trees of this variety, on the ground, small parts and at some times almost, as it appears, the entire nest; and I know of no other animal that has been known to split the leaves of this tree, as this one certainly does.

As to the food of this animal I can only surmise, as I did not dissect the only specimen I ever saw in the flesh, nor have I any clue farther than its habits of living in trees, but think it must subsist on the fruit of the tree, which is usually in fruit more or less all the

year, especially on those isolated and much branched trees which are found away from thick timber, and in which I believe it to be most abundant.

This conclusion is further verified by the relation of the teeth in the genus Phenacomys to the genus Hesperomys, which are rooted in both genera. The latter usually prefers grain to other food, and the teeth are more adapted for masticating hard food than the Arvicolas, whose teeth are not rooted and which feed on grass. From the tracks in the snow which I have seen at different times around the foot of the trees which it inhabits, and which tracks I think were made by this animal, I judge that it does not hibernate, and that it may to some extent feed on grass; but I have not been able to trace these tracks to any distance from the tree greater than two or three yards, neither am I positive that they were made by this animal.

Any information leading to a further knowledge of this interesting creature will be thankfully received, and we will be very grateful to anyone who will be kind enough to send us specimens or measurements. Alcoholic specimens or specimens in the flesh much preferred. *Aurelius Todd.*

THE MESQUITE BEAN.

(From the *Pacific Rural Press*, June 7, 1890.)

One of the most useful and characteristic of the trees indigenous to the southern—Mexican—borders of the United States is the mesquite tree, also known vernacularly in some localities as the Cashaw, or Algeroba tree.

According to Dr. V. Havard of the United States army, this tree constitutes the principal growth of the wooded tablelands and high valleys throughout South and Southwestern Texas. It extends westward through New Mexico and Arizona to San Diego, California, and is found to the southward through Mexico, Central and South America to the southern parts of the Argentine Republic (exclusive of Patagonia).

Prosopis dulcis (Kunth) is probably the correct botanical name of our tree, though it is usually called Prosopis juliflora D. C., by American botanists. Algarobia glandulosa, Prosopis horrida, P. juliflora, P. siliquastrum and P. glandulosa are either synonyms or mere varieties, according to Bentham.

The mesquite is frequently nothing but a thorny, straggling shrub, growing in large impenetrable thickets near the coast or over the sandhills of the Colorado desert. Elsewhere in less exposed sit-

uations, it becomes a low, wide-spreading tree, 20 to 30 feet in height, with a trunk seldom over a foot in diameter, although sometimes found from two to three feet in thickness.

In the arid regions, where this tree is found in its best estate, this tree is most useful for the excessively hard, durable wood, valuable for fuel, in fencing or for other uses. Mesquite posts and rails are but slightly affected by exposure to the influences of ordinary weather. The trunk and roots as well are unsurpassed for fuel, making a hot fire, and in many sections, from California to Texas, is the most common, often the only obtainable, fuel. The wood is also useful in cabinet work, being heavy, fine-grained, and taking a fine polish, when it has the appearance of mahogany. It is richly colored, varying from purplish black in the center to a reddish brown and yellow near the bark.

The tree is also adapted for live fences; of rapid and easy growth in situations where scarcely any other tree will thrive, it can be made to form impenetrable hedges in a few years from the seed.

Baron von Mueller says: 'The variety glandulosa exudes a gum not unlike gum arabic, and this is obtained so copiously that children could earn two to three dollars a day in gathering it in Texas, latterly about 40,000 pounds being bought by druggists there.'

On the other hand, Dr. V. Havard in speaking of the mesquite tree of Texas, says: 'During the summer months the bark secretes an amber colored gum which has the taste of gum arabic, and like it makes excellent adhesive mucilage. Its solution in water is slightly acid and astringent; it is a useful and palatable drink in the diarrhœa of children. The quantity of gum secreted by each tree is not large enough to make it an important article of commerce.'

In California I have never observed the gum in any quantity. I have collected specimens of this gum that closely resembled jet in color and very hard when found—evidently caused to exude by fire.

The tree produces abundantly of its long and slender bean-like pods, with a thick and spongy mesocarp, sweetish to the taste. These pods contain from 25 to 30 per cent of grape sugar, 11 to 17 per cent of starch, 7 to 11 per cent of protein; of organic acids, pectin and other non-nitrogenous nutritive substances 14 to 24 per cent. They are also comparatively rich in potash, lime and phosphoric acid. The pods of several varieties are said to be rich in tannic acid.

Containing, as they do, more than half their weight in assimilable nutritive principles, these pods constitute a valuable article of food, and are one of the staples with many Mexicans and Indians.

The Cahuilla Indians, and also the Cocopahs of the Colorado desert region in California, gather large quantities of the pods annually, the time of harvest lasting from June into August, when the trees are frequently loaded with their golden wealth.

The squaws go out into the groves and bring back their 'hotls' (a large, coarse-mesh sack, resembling a hammock) and baskets full of the yellow pods. They then grind the pods in their stone mills or 'matates,' into a coarse meal or flour, remove the seeds and hard shells around the seeds, and then cook to suit their taste. Sometimes they boil the flour in water and make a gruel or pudding, but the larger portion of the meal goes to form large, flat cakes or loaves of bread which may be made to supply food for many months to come, and are easy for the nomadic tribes to transport.

This bread is very sweet and pleasant to the taste, with a pleasant, slightly acid and astringent, spicy flavor. A sparkling drink, called aloja, is also made from these pods. The Comanche and Apache Indians formerly used large quantities of an alcoholic drink —a weak beer—made by fermentation of the flour.

The mesquite beans (as the pods are commonly called) are relished by most herbivorous animals, and horses and cattle will eat them with avidity and thrive on them as a substitute for grain. They are likely to be more largely utilized as fodder for stock than as human food.

In this connection, it is worthy of note that the pods of the mesquite produced in the valleys near the coast are almost invariably thin and bitter instead of thick, sweet and nutritious, as are those grown in the more arid sections on the Colorado desert and eastward. Evidently a warm, dry climate is necessary to the best development of the fruit, the fogs and coast winds causing a very inferior product.

The delicate green, finely divided foliage renders this a very beautiful tree when in leaf, and it is well worthy of being extensively cultivated. *C. R. Orcutt.*

THE TENT CATERPILLAR.

These common pests having been so very plentiful this year in this locality (Moosup Valley, R. I.), I resolved to make a study of them, not adding anything new, perhaps, to the cause of science, but satisfying myself as to their habits. At the usual time in early spring the webs began to show upon apple and wild cherry trees. It is said that the young caterpillars feeding upon the tender leaves eat on an average two apiece each day. At this rate it does not

take many days to make quite a showing of naked boughs. As the caterpillars grow a new skin is formed under the old one, which splits down the back and drops off. When fully grown the worm is not such an unsightly object to look upon, if one could forget what a pest it is. They are then about two inches long, the black body covered with many yellow hairs, with a white stripe along the back, and many irregular light streaks down the sides. Between these and the white stripe is a row of pale blue spots on each side of the back.

I brought in one of the spindle-shaped cocoons, which seems to be made of white silk, sprinkled with a sulphur colored powder. Having kept it for about three weeks my patience was rewarded by a sight of the full-fledged moth, which was about one and one-quarter inches across the upper wings, which were of a dark fawn color, crossed by two oblong lighter streaks edged with white. I was surprised to find such a tiny hole in the end of the cocoon; it seemed almost impossible that the moth could have escaped. It is said that soon after the adult insects appear the females begin to lay their eggs. These are in clusters of about three hundred, arranged in the form of a belt around a small twig. This is covered with a varnish-like substance which serves as a protection during winter, as the belt remains upon the twig until the following spring. The season when the branches are bare is therefore the best time to war against this pest. If the trees are carefully searched at this time these egg clusters may be easily found and destroyed.

S. E. Kennedy.

EDITORIAL.

Our frontispiece this month is an illustration of the first olive mill on the Pacific Coast. We are indebted for it to the genial secretary of the California state board of horticulture, Mr. B. M. Lelong, The mill was built at the old mission at San Diego, the oldest mission in California.

Our new dress has been very favorably commented upon, and this magazine is the first to appear in this new style of self-spacing type. In beauty of typography we can now reasonably claim no superior in the world, and none of equal excellence in this respect on the Pacific Coast. We look to our contributors to assist us in making such a statement equally true of the matter presented our readers.

The demands of the general public sustains our view that there is a field for a journal that shall maintain a high standard, reliable,

combining practical methods with scientific accuracy. It is impossible to divorce technical details from our work in this treatment, but we aim to give enough in popular style to repay the general reader. On the other hand, the specialist will find the journal indispensable from the quantity of original matter, whether it be in technical or popular language.

NOTES AND NEWS.

LUPINUS NANUS.—Of all the annual lupines, this dwarf Californian species is one of the most charming, the shade of purple-blue being particularly pleasing. When in Essex recently, I saw a large patch of it on a seed farm, and was enabled to realize what a mass of pleasing color is formed when so grown. The seed farmers sow thinly, and then take out some of the plants if they deem them to be too crowded. The individuals, having room in which to develop, form dense tufts and bloom with surprising beauty and brilliancy. But in ordinary gardens the sower of seeds of annuals seems unable in most cases to overcome the bad habit of sowing too thickly, or of understanding the necessity for some thinning out. Only let any one grow this delightful annual in good soil in an open situation and give it plenty of room, and its beauty will astonish.—*The Garden*, xl. 53.

LAYIAS.—These pretty hardy annuals were shown at Chiswick the other day in the Kew collection of cut flowers and attracted great attention. The one which in the Kew group attracted chief attention was Layia heterotricha, with flowers about the diameter of a half-crown piece, yellow eye, rich yellow ground, edged very evenly on the points of the petals with pure white. The edging is narrow and clearly defined, the ground a very beautiful shade of apricot-yellow. Out in the gardens and under a north wall there is a small bed of Layia elegans, presumably the same thing. Both are lovely annuals and should be universally grown, especially to furnish flowers for cutting. Layia glandulosa in the Kew collection has charming pure white flowers. This is a lovely little variety also and should become an immense favorite, especially for vase or espergne decoration.—*The Garden*, xl. 53.

A NEW ASTER.—Those who are interested in these beautiful fall blooming wild flowers, will find a new species illustrated and described in a recent number of the *Botanical Gazette*. It is called Aster Orcuttii, and is from the Colorado desert, in California. It

is a very handsome species, and well worth cultivating. The flowers are not borne in clusters or panicles, as in so many asters, but are singly on the ends of the stalks. The edges of the leaves are also so deeply cut as to be almost comb like, and very different in appearance to the ordinary run of the asters as we see them in the east.—*Meehans' Monthly*, i. 22.

LIBRARY CATALOGUE.

(Scientific books and periodicals may be ordered through our Book and Subscription Department.)

Recent accessions to the library of the West American Museum of Nature and Art will be catalogued monthly.

4112. Second annual report of the Cornell University agricultural experiment station, Ithaca, N. Y. 1889. (The first annual report is wanted by the editor.)

4113. Reports on the observations of the total eclipse of the sun, December 21-22, 1889, and of the total eclipse of the moon, July 22, 1888, to which is added a catalogue of the library, published by the Lick observatory. Sacramento. 1891. 122 pp. 8vo.

4114. Proceedings of the American Forestry Association at the summer meeting held in Quebec, September 2-5, 1890, and at the ninth annual meeting, held in Washington, December 30, 1890. Washington, D.C. 1891. 111 pp., 8vo. (Copies may be obtained of Charles C. Binney, 218 South 4th street, Philadelphia, at fifty cents each.)

4115. Catalogue of the herbarium of the late Dr. Charles C. Parry, of Davenport Iowa. Printed by Mrs. E. R. Parry, Davenport, Iowa. July, 1891. 82 pp., 8vo.

The collection contains upwards of 20,000 specimens, representing over 7,000 species, and is particularly rich in West American types. The herbarium, and an extensive botanical library, are now offered for sale by Mrs. Parry, and it is greatly to be hoped that they may be secured by some Pacific coast institution, where they most properly belong.

4116. The practical working of the Inter-state commerce act. By John A. Wright. Philadelphia. 1891. 40 pp., 8vo.

4117. Catalogue of economic plants in the collection of the U. S. Department of Agriculture. By William Saunders. Washington. 1891. 42 pp., 8vo.

4118. The Chocolate-plant (Theobroma cacao) and its products. Walter Baker & Co. Dorchester, Mass. 1891. 40 pp., 8vo., with illustrations.

4119. U. S. Dept. Agriculture: Forestry Division. Bulletin No. 5. What is Forestry? By B. E. Fernow. Washington. 1891. 52 pp.

4120. U. S. Dept. Agriculture. Papers on horticultural and kindred subjects. By William Saunders. Washington. 1891. Reprinted from reports of the department of agriculture. 1863–1889.

2121. Basket-work of the North American aborigines. By Otis T. Mason. Washington. 1890. From the report of the Smithsonian Institution, 1883–'84, part ii. pp. 291–306 and plates i. to lxiv.

4122. Geological survey of Missouri. Bulletin No. 5. 1891.

4123. Illustrative cases of congenital club-foot. By H. Augustus Wilson, M. D. Reprinted from Annals of Gynæcology and Pædiatry. June, 1891. From the author.

4124. Directions for collecting birds. By Robert Ridgway.

4125. A catalogue of the fresh-water fishes of South America. By C. H. and R. S. Eigenmann.

4126. Fishes collected by William P. Seal in Chesapeake bay, at Cape Charles City, Virginia, September 16 to October 3, 1890. By Barton A. Bean.

4127. Relations of temperature to vertebrae among fishes. By David Starr Jordan.

4128. On the structure of the tongue in humming birds. By Frederic A. Lucas.

4129. Contributions to American botany. xviii. By Sereno Watson. From Proc. Amer. Acad. Arts and Sci., xxvi, 124-163. From the author.

This paper consists (1) of descriptions of some new N. A. species, chiefly of the U. S., with a revision of the American species of the genus Erythronium; (2) descriptions of new Mexican species, collected chiefly by C. G. Pringle in 1889 and 1890; (3) upon a wild species of Zea from Mexico; and (4) notes upon a collection of plants from the Island of Ascension. Liebmann's genus Llavea, of the Sapindaceæ, is named Neopringlea—worthily dedicated to the eminent Mexican explorer, C. G. Pringle.

4130. The relation of the Mexican flora to that of the United States. By Sereno Watson. From Proc. A. A. A. S., xxxix, 291-2. Abstract. From the author.

4131. Notes on North American Halorageæ. By Thomas Morong. Reprinted from Bull. Tarr. Bot. Club, xviii, 229-246. From the author.

Callitriche longipedunculata is herein described from the mesas near San Diego, California. This plant was distributed by C. R. Orcutt under the name C. marginata in 1884.

Wonders

Are wrought by the use of Ayer's Hair Vigor in restoring gray hair to its original color, promoting a new growth, preventing the hair from falling, keeping it soft, silky, and abundant, and the scalp cool, healthy, and free from dandruff or humors. The universal testimony is that this preparation has no equal as a dressing, and is, therefore, indispensable to every well-furnished toilet.

"I have used Ayer's Hair Vigor for some time and it has worked wonders for me. I was troubled with dandruff and was rapidly becoming bald; but since using the Vigor my head is perfectly clear of dandruff, the hair has ceased coming out, and I now have a good growth, of the same color as when I was a young woman. I can heartily recommend any one suffering from dandruff or loss of hair to use Ayer's Hair Vigor as a dressing."—Mrs. Lydia O. Moody, East Pittston, Me.

"Some time ago my wife's hair began to come out quite freely.

Ayer's Hair Vigor

not only prevented my wife from becoming bald, but it also caused an entirely new growth of hair. I am ready to certify to this statement before a justice of the peace."—H. Hulsebus, Lewisburgh, Iowa.

"Some years ago, after a severe attack of brain fever, my hair all came out. I used such preparations for restoring it as my physicians ordered, but failed to produce a growth of hair. I then tried, successively, several articles recommended by druggists, and all alike fell short of accomplishing the desired result. The last remedy I applied was Ayer's Hair Vigor, which brought a growth of hair in a few weeks. I think I used eight bottles in two years; more than was necessary as a restorative, but I liked it as a dressing, and have continued to use it for that purpose. I believe Ayer's Hair Vigor possesses virtues far above those of any similar preparation now on the market."—Vincent Jones, Richmond, Ind.

Ayer's Hair Vigor

PREPARED BY

DR. J. C. AYER & CO., Lowell, Mass.

Sold by Druggists and Perfumers.

FOUR

GOOD REASONS WHY YOU SHOULD TAKE

THE SUN

It Has The Most Local News. Best Editorials. Latest Telegrams. People's Confidence

It is the **People's Paper.**

Terms of Subscription:

Daily Sun, per week.....	$ .15
" " per month	.65
" " per yr, in advance.	7.50
Weekly Sun, six months. ..	1.00
" " one year	2.00

A WORD TO ADVERTISERS.

THE SUN today has the largest circulation among the best people.

In proportion to its charges THE SUN guarantees better results to its advertisers than any other medium in Southern California.

The proof of these two statements is in the fact that the DAILY SUN has a larger number of the most discriminating local advertisers than any other paper in the county.

For rates of advertising, address the

SAN DIEGO SUN.

CLASSIFIED.

ONE LINE, ONE TIME, ONE DIME.
ONE LINE, TEN TIMES, TEN DIMES.

ART.

MISS M. E. GOVER, CASCADE, COLorado. Illustrator, copper plate etchings of western scenery.

MISS TURNER, 1245 EIGHTH ST., SAN Diego, Cal. Lessons in drawing and painting. Orders taken. Still life a specialty.

BOOKS.

BOTANY OF CALIFORNIA. TWO VOLumes, price, $12. C. R. Orcutt, Orcutt, Cal

HISTORY OF CIRCUMCISION. BY P. C. Remondine, M. D. Send orders to F. A. Davis, Publisher, 1231 Filbert street, Philadelphia.

THE WISCONSIN NATURALIST, MADison, Wisconsin. A monthly magazine, devoted to the numerous branches of natural history. Fifty cents a year; sample copy, five cents.

THE KANSAS CITY SCIENTIST, FORmerly the Naturalist. Established in 1885. Now published by the Academy of Science Pub. Co. at $1.00 per year. Sample to prospective subscriber free. Official organ of the K. C. Academy of Science. Devoted to Science, Art and Literature. Its readers will be kept abreast with the leading topics of the day. Of a popular character, no more technical terms being used than are absolutely necessary. Shall we count you among the readers of Vol. V?

F. M. KINNE, KNOXVILLE, IOWA, OFfers geological specimens, scientific books, minerals, mound and Indian relics, Confederate money, shells, oological specimens, and supplies. Illustrated list for stamp.

C. F. CARR, NATURAL HISTORY STORE 126 State St., Madison, Wis. Send stamp for catalogue. Marine and fresh water shells, corals, bird skins, eggs, minerals, etc. Supplies for taxidermists, entomologists, oologists, botanists, etc.

MADAGASCAR NATURAL HISTORY Specimens of all kinds. Prices low. Send postage stamps for price lists. F. Sikora, naturalist, Annanarivo, Madagascar, via Marseilles, France.

CALIFORNIA TREES AND FLOWERS. An illustrated 32-page book of descriptive notes. Prepaid for ten cents. Orcutt Seed and Plant Co., San Diego, Cal.

BUSINESS CHANCES.

GOOD CHANCE FOR MAN OR WOMAN, at own home, to engage in profitable business. Small capital required; fair education needed. Address, with references, C. R. Orcutt, San Diego, Cal.

CONTRACTORS.

LUFKIN & KELLY, CONTRACTORS for excavations, bituminous walks, concrete work, etc. Good rich soil cheap. Sewer pipes laid. Give us a call. Satisfaction guaranteed. Office, Fifth street, between C and D, San Diego, Calif.

EDUCATIONAL.

MRS. M. L. T. CHISHOLM, EUROPEAN instructor. Organ, piano, singing and French. Mus. Bac. London, England. Terms to suit.

ELECTRICAL SUPPLIES.

F. S. HARTWELL, ELECTRICIAN, 924 Sixth street, San Diego, Cal. Bells, batteries, etc.

EXCHANGES.

BOOKS WANTED IN EXCHANGE FOR seeds and plants. C. R. Orcutt, Orcutt, Cal.

FINANCIAL.

NOW IS THE TIME TO INVEST IN SAN Diego But remember, good counsel always saves more than it costs. Investment of funds for clients a specialty. Hosmer P. McKoon, San Diego, Cal.

JEWELRY.

M. GERMAN, THE LARGEST JEWelry establisment on the Pacific Coast. Both wholesale and retail.

JOB PRINTING.

HILDRETH'S BOOK AND JOB PRINTing House, 930 Sixth street, between D and E, San Diego, Cal.

WEDDING INVITATIONS, VISITING cards engraved and printed at M. German's, the leading jeweler, San Diego, Cal.

GALER & SON, JOB PRINTERS. GOOD work at fair prices. Estimates furnished on application. No. 316 West First street, Los Angeles, Cal.

MINERALS.

A. N. FULLER, LOCK BOX 63, LAWrence, Kansas, offers choice minerals. Unsurpassed in quality and beauty, 300 varieties from all over the world. Very LOW prices. Catologue free. Fine specimens from Pacific Slope wanted in exchange, or for cash.

C. F. CARR, 126 STATE ST., MADISON, Wisconsin.

THE WORLD'S FAIR COLLECTION OF Minerals and Curiosities mailed by us is highly spoken of. New California Bulletin and lists, with box of curios, only ten cents. Naturalists' supplies. U. L. Hertz & Co., Napa City, Cal.

G. K. GREENE, DEALER IN FOSSILS, minerals, mound and Indian relics, marine shells and corals, U. S. and foreign postage and revenue stamps, coins, medals and badges, old arms and curiosities of all kinds. 62 South Illinois st., Indianapolis, Ind.

NATURAL HISTORY.

CEYLON, JAVA, BORNEO AND NEW Guinea insects, especially lepidoptera and coleoptera, single or in lots. Also orthoptera and dragon flies, and land and fresh water shells. Prices low. H. Fruhstorfer, care of German consulate, Soerabaia, Java.

NATURAL HISTORY.

DR. EDWARD GRAY, BENICIA, CAL., sole Pacific Coast agent of Gundlach Optical Co. Microscopic objectives of this company on hand and to order. Send for price lists. Gundlach photograph lenses to order Agent of Queen & Co's Acme microscopes.

AURELIUS TODD, TAXIDERMIST, EUgene, Oregon, offers the following curios:

Starfish	10 to 15
Sea eggs	05 to 20
Sea asters or sand dollars	10

In addition to the above, we have about fifty sets of eggs and a few skins of the Tufted Puffin, which we offer at the remarkably low price of 75 cents each for the former and $1.50 each for the latter (postage extra.)

The whole lot of eggs we will sell at a special bargain.

Ten per cent. discount on orders of $5.00; and twenty per cent. on orders of $10.00 or more.

NATURALISTS' SUPPLY DEPOT, ESTablished by Brewster & Knowlton, Boston; Arldrich & Capen, Boston; A. L. Ellis & Co., Pawtucket. Consolidated, 1884, by Ellis & Webster, succeeded, Sept. 1, 1885, by Frank B. Webster, Boston. Dealers in all articles required by Naturalists, Oologists and Taxidermists; also, bird-skins, birds' eggs curiosities, and stuffed specimens. Sole agent in the United States for Thomas Hurst's artificial glass eyes. Publisher of the *Ornithologist* and *Oologist*. Send 10 cents for sample copy and catalogues. Frank B. Webster, 409 Washington St., Boston Mass.

C. R. ORCUTT, SCIENTIFIC BOOKS, Orcutt, Cal.

NURSERIES.

HALL'S ADDITION NURSERY, RIVERside, Cal. Wholesale and retail dealers in all kinds of fruit trees. Send for price list.

SEEDS.

CHIONANTHUS VIRGINICA, A VERY handsome ornamental tree, twenty to thirty feet high, now becoming very popular in the eastern states. The very showy and exceedingly beautiful flowers appear early in June and are white and fringe-like. The flowers are followed by plum-colored berries resembling bunches of grapes. The foliage remains green until late in the fall, and it is one of the handsomest of our small trees. I can supply clean seed about Sept. 10th by registered mail at 20 cents an ounce, $2 per lb. or 10 lbs. for $18. Orders should be sent early. Write for prices of other tree and shrub seeds, stating your wants. J. H. H. Boyd, Cagle, Sequatchie county, Tenn.

TWELVE VARIETIES OF CALIFORnia Wild Flower seeds, 50 cents. Orcutt Seed and Plant Co., San Diego, Cal.

SHELLS.

MISS IDA M. SHEPARD, LONG BEACH, Los Angeles County, California, makes a specialty of West American Mollusca.

TRUNKS.

J. C. CUNNINGHAM, TRUNKS AND traveling bags, 136 S. Main St., Los Angeles, Cal. Repairs and exchanges of new for old trunks, for all they are worth.

GALER & SON.

JOB PRINTERS.

Good work at fair prices. Estimates furnished on application.

No. 316 West First Street, Los Angeles, Cal.

(Between Broadway and Hill Street.)

Advertisements and subscriptions received for

Science and Horticulture.

Canvassers wanted on liberal terms.

J. D. BURCH & CO.

Wholesale and retail dealers in

Choice Family Groceries

829-831 Fifth Street.

You will find bargains in our store. Call and see us.

Art Store!

944 SIXTH STREET,

Between D and E, - - SAN DIEGO, CAL.

Manufacturer of and dealer in—

Mirrors, Mouldings,

PICTURES AND FRAMES.

LOUIS DAMPF.

PEOPLE'S ONE PRICE STORE

Boyd Block, Main St., between 7th and 8th, RIVERSIDE, CAL.

CLOTHING Gents,' Ladies' and Children's Shoes, Gents' Furnishings, Hats, Boots, Trunks, Valises, Blankets. etc. My Motto: Quick Sales and Small Profits.

JULIUS BERNSTEIN.

F. P. BRUNER,

NOTARY PUBLIC

Conveyancer of Deeds, Etc.

With Wells, Fargo & Co.

Sixth and F Sts., San Diego, Cal.

BULLETIN OF THE NO. 1.

San Diego Nursery.

The Orcutt Seed and Plant Company, Nurserymen, Seedsmen and Florists.

Corner Fifth and C Streets, San Diego, California.

MISS KATE O. SESSIONS, Manager. P. O. Box 713.

Orders will be received at the office of this magazine.

To our Patrons.

(Introduction to California "Trees and Flowers.")

OUR specialty in dealing in native tree and flower seeds and plants, many imperfectly or wholly unknown to the horticultural public, leads us to offer the following descriptive notes of the more desirable West American trees and flowers, which we hope may lead to their extending their circle of admirers. Our facilities for obtaining whatever may be desired are excellent, and our reputation as botanists insures the greatest accuracy.

No guarantee, however, expressed or implied, accompanies goods sent out. Orders received too late for the season's supply will be filled the succeeding season, unless we are otherwise advised.

ORNAMENTAL TREES AND SHRUBS—native and foreign—such as Grevilleas, Cypress, Palms, etc., in choice variety.

CITRUS AND DECIDUOUS FRUITS, especially the Strawberry Guava, Figs, Oranges, etc., in all leading varieties can be supplied at ruling prices. Grapes and small fruits also furnished. Price list on application.

We offer a great variety of seeds of desirable California wild flowers—both annuals and perennials. Advance orders from the trade for any quantities desired are solicited.

Palm seeds, other ornamental tree and shrub seeds, etc., at lowest quotations. Contracts for growing seeds solicited. We also carry a great variety of choice flower seeds—not native—especially recommended for cultivation in California.

The rose and chrysanthemum receive special attention, and permanent shrubs, vines and trees in choice varieties are always on hand. Correspondence solicited.

California Flowers.

Many varieties mentioned in our descriptive list of "California Trees and Flowers," we are at times unable to supply, but on the other hand, we are continually introducing new and desirable trees and flowers to our novelty-loving friends. Descriptions of these, and supplementary notes on "California Trees and Flowers" may be found in this journal.

ANNUALS

	PER PKT.
ABRONIA any species	$ 10
ACTINOLEPIS coronaria	10
ALFILARIA	05
ANTIRRHINUM Orcuttianum	10
ARGEMONE any variety	10
BÆRIA gracilis	15
CALANDRINIA any variety	10
CASTILLEIA affinis	25
CHÆNACTIS any species	10
CLARKIA any variety	05
CLAYTONIA perfoliata	10
COLLINSIA any variety	05
COLLOMIA grandiflora	05
DATURA meteloides	05
EYRTHRÆA venusta	25
ESCHSCHOLTZIA any variety	05
GILIA any variety	10
LASTHENIA glabrata	10
LAYIA elegans	15
LEPTOSYNE Douglasii	20
LUPINUS any variety	10
NEMOPHILA any variety	05
OENOTHERA bistorta	10
ORTHOCARPUS purpurascens	25
PAPAVER Californica	25
PENTACHÆTA aurea	10
PHACELIA campanularia	10
congesta	05
tanacetifolia v. alba	05
Orcuttiana	20
Parryi	15
whitlavia	10
PLATYSTEMON Californicus	10
SALVIA carduacea	10
Columbariae	15

EVERGREENS.

Our packets of evergreen tree and shrub seeds are liberal in size, usually one oz. in weight. Price, 50 cents each, of any species in stock.

FRUIT SEEDS.

We will report any fruit or tree seeds in any quantity desired.

STRAWBERRY GUAVA, per lb .... $ 3.00

PALMS.

	PER LB.
ERYTHEA armata	$ 2.00
edulis	2.00
WASHINGTONIA filifera	1.00

PERENNIAL PLANTS.

	PER PKT.
AGAVE any variety	$ 25
AQUILEGIA any variety	15
CASTILLEIA foliolosa	25
DELPHINIUM any variety	10
DICENTRA chrysantha	15
DODECATHEON Clevelandii	15
FRASERA Parryi	20
LOBELIA splendens	50
MIMULUS cardinalis	10
glutinosus	50
moschatus (musk plant)	10
NOLINA Bigelovii	20
PENTSTEMON any species	20
ROMNEYA Coulteri	25
YUCCA baccata	15
whipplei	20
ZAUSCHNERIA Californica	50

SHRUBS.

	PER PKT.
Any species in stock	$ 25

VINES.

	PER PKT.
COBÆA scandens	$ 10
LATHYRUS splendens	25
TACSONIA, with pink flower	20
MINNA lobata	20

One of the most satisfactory of rapid growing vines and blooming abundantly.

MEXICAN MORNING GLORY 10

A rapid grower with very large and beautiful flowers and abundant foliage. Plant seed last week of April.

CACTI.

CHOICE CACTI. ORCUTT SEED AND Plant Co., San Diego, California.

ANHALONIUM lewinii	$ 25
Williamsii *Web*	25
CEREUS californicus *Nutt*	1.00
grandiflorus *Haw*	20
viridiflorus *Engelm*	50
caespitosus *Engelm*	25
Engelmanni *Parry*	75
"Rainbow cactus"	1.00
ECHINOCACTUS viridescens	25
Lecontei *Engelm*	1.00
Simpsoni *Engelm*	20
ECHINOPSIS oxygona	40
mulleri	40
multiplex	40
cyriesii	40
MAMILLARIA Grahamii	25
Goodrichii *Scheer*	25
phellosperma *Engelm*	1.00
PILOCEREUS senilis, "Old Man" cactus	$1 to 10.00
OPUNTIA tuna (cuttings)	50
basilaris	50
prolifera	25
Serpentina	25
emoryi	25
engelmanni	50

We have handled over 600 varieties of cacti and aim to supply collectors and the trade at reasonable prices. The above choice varieties are now in stock and can be supplied by mail or express.

SHELLS.

ON RECEIPT OF PRICE AT THIS OFfice we will send, postpaid:

ACMÆA mitra *Esch* ..... $ 05
spectrum *Nutt* 05
pelta *Esch* 05
persona *Esch* 05
patina *Esch.* 05
asmi *Esch* 10
cumingii *Reeve.* 05
scabra *Nutt.* 05
AMIANTIS callosa *Conr* 25
AMYCLA carinata *Hds.* 05
ASTYRIS gausapata *Gld* 05
tuberosa *Cpr* 05
BARBATIA gradata *Sby* 05
BARLEELA subtenuis *Cpr*, doz 15
BITTIUM quadrifilatum *Cpr.* ..... 03 to 10
BULLA nebulosa *Gld* 10
BYTHINELLA binneyi *Tryon.* 05
intermedia *Tryon.* 05
CARDIUM elatum *Sby*, $1.00 to $5.00.
quadragenarium *Conr* 1.00
substriatum *Conr* 10
corbis *Mart.* ..... 10 to 50
CERITHIDEA sacrata *Gld*, doz 10
CEROSTOMA nuttallii *Conr.* 05
CHIONE fluctifraga *Sby* 10
simillima *Sby* 10
succincta *Val* 10
CHITON scabra *Reeve* 05
hartwegii *Cpr* 05
dentiens *Cpr* 10
CHORUS belcheir *Hds.* 1.00
CRYPTOMYA Californica *Conr* 10
CŒCUM oreuttii *Dall*, doz. 20
CONUS Californicus *Hds* 05
CREPIDULA rugosa *Nutt.* 10
DONAX Californicus *Conr*, doz 10
flexuosis *Gld* 10
FISSURELLA volcano *Reeve.* 05
GLYPHIS aspera *Esch.* 10
GONIOBASIS plicifera *Lea*, doz 15
HALIOTIS cracherodii *Leach.* 50
rufescens *Swains* 1.00
corrugata *Gray* 1.00
splendens *Reeve*, 5 cents to $5.
HINNITES gigantea *Gray*, 15 cts. to $1.
HAMINEA vesicula *Gld* 15
virescens *Sby* 15
HELIX newberryana *Binn* 25
stearnsiana *Gabb* 10
tudiculata *Binn* 10
levis *Pfr* ..... 03 to 25
LASEA rubra *Mont*, doz 10
LEPTOTHYRA bacula *Cpr* ..... 03 to 10
LITORINA planaxis *Nutt*, doz. 10
scutulata *Gld*, doz. 10
LOTTIA gigantea *Gray* 05
LUCAPINA crenulata *Sby* 50
LUPONIA spadicea *Gray* 1.00
MACOMA secta *Conr* 10
indentata *Cpr* 15
inquinata *Desh.* 15
MACHAERA patula *Dixon*, poor 10
MACRON lividus *A. Ad* 10
kellettii *A. Ad* 50
MELAMPUS olivaceus *Cpr*, doz. 15
MITRA maura *Swains* 1.00
MONOCEROS lugubre *Sby.* 10
engonatum *Conr* 05
var. spiratum *Blainv* 05
paucilirata *Stearns* 05
MODIELA capax *Conr.* 20
MYTILAS Californica *Conr* ..... 05 to 25
bifureatus *Conr* 10
MYURELLA simplex *Cpr* 15
NASSA tegula *Reeve* 05
NACELLA instabilis *Gld* ..... 03 to 20
NEVERITA reclusiana *Petit* 25
OCINEBRA poulsonii *Cpr* 10
OLIVELLA biplicata *Sby.* 05
boetica *Cpr* 05
OMPHALIUS aureotinctus *Fbs.* 25
fuscescens *Phil* 05
OSTREA lurida *Cpr* 05
PECTEN aequisulcatus *Cpr* 10
monotimeris *Conr*, doz 15
POMAULAX undosus *Wood* 25
PHASIANELLA compta *Gld*, doz 25
PTERONOTUS festivus *Hds* 05
RANELLA Californica *Hds.* 25
SAXIDOMUS nuttallii *Conr* 30
squalidus *Desh* 30
SCHIZOTHERUS nuttallii *Conr* 50
SEPTIFER bifurcatus *Rve* 10
SOLEN rosaceus *Gld* 10
SOLECURTUS Californianus *Conr* 10
TAPES staminea *Conr.* 10
var. ruderata *Desh* 10
TIVELA crassatelloides *Conr* 50
VOLVARINA varia *Sby* 05

LILIES.

	PER DOZ.
ALLIUM any species	$ 25
BLOOMERIA any species	50
BREVOORTIA coccinea	50
BRODIÆA any species	40
CALOCHORTUS any species	1.00
our choice mixed varieties	40
CAMASSIA any species	1.50
CHLOROGALUM any species	1.00
ERYTHRONIUM any species	1.00
FRITILLARIA any species	1.00
our choice	50
HESPEROCALIS undulata	5.00
	EACH.
LILIUM Parryi	1.00
Washingtonianum	50
rubescens	40
parvum	30
maritimum	1.50
pardalinum	40
Humboldtii	50
Columbianum	40
ZYGADENUS Fremonti	10

PERENNIALS.

	EACH.
DELPHINIUM cardinale	25
DICENTRA chrysantha	1.00
DODECATHEON Clevelandi	10
per doz.	1.00
ROMNEYA Coulteri. (Dormant roots).	50c to 1.00
SISYRINCHIUM bellum	10
ZAUSCHNERIA Californica	50
LEWISIA rediviva	25
CYPRIPEDIUM montanum	50
GOODYEARIA Menziesii	50

A few rare or very desirable cultivated plants for Southern California. Write for particulars.

BOUGAINVILLEAS.

POINSETTIA pulcherima
BIGNONIA venusta
STREPTOSOLEN Jamesonii
STEPHANOTIS floribunda
TECOMA Mackenii rosea
LASIANDRA macrantha
BUSARIA spinosa
SEAFORTHIA elegans
PHŒNIX canariensis
reclivata
ERYTHEA armata
BRACHYCHITON acerifolia
STERICULIAS
FICUS elastica
macrophyllum

CALIFORNIA WILD FLOWER SEEDS.

Twelve varieties	50
Twenty-five varieties	1.00
One hundred varieties	5.00

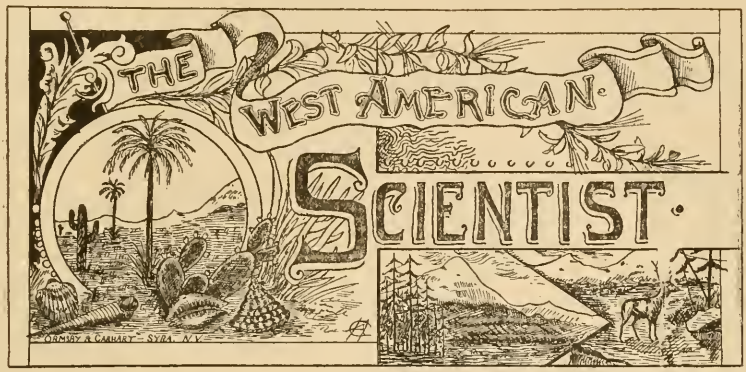
A CENTURY OF FLOWERS.

A choice collection of one hundred named varieties of flower seeds specially adapted to the Pacific Coast, including many rare or new plants. Price, $5.00. A choice assortment of wild flower seeds will be included.

THE SALTON SEA!

One hundred shells from the shores of the famous Salton Sea for 50 cents. Only a few million in stock.

ESTABLISHED 1864.



$2.00 a year (monthly). Send 20 cents for a copy.

A Specimen Cut From the Recently Published Book, Entitled

West Coast Shells.

THIS cut represents the fine Oregon species, *Helix fidelis*. Gray. The book describes the Marine, Fresh water and Land species of that part of the United States which lies WEST OF THE ROCKY MOUNTAINS. Written in a simple style, with pronunciation of Latin names and many helps for young scientists. 230 pages, nearly 200 engravings. Good paper and well bound. Sent postpaid for $1.75.

Great Speeches of Col. R. G. Ingersoll.—352 pages. Includes a complete list of Ingersoll's magnificent orations, patriotic, political, home life, etc., including the celebrated speech to "The Farmers;" the "Declaration of Independence;" "The Times;" "The Veteran Soldiers," wherein "*The past rises before him (me) like a dream*," etc. Illustrated.

Price in cloth with gilt side and back stamp, $1.00
Paper cover 35

Ten Years a Cow Boy.—471 Pages.—A full and vivid description of frontier life, including romance, adventure and all the varied experiences incident to a life on the plains as cow boy, stock owner, rancher, etc., together with articles on cattle and sheep raising, how to make money, description of the plains, etc., etc. Copiously illustrated.

Price in cloth with gilt side and back stamp, $1.00
Paper cover 35

Every-Day Cook-Book and Encyclopedia of Practical Family Recipes, for Family use. 324 pages. An economical, full, reliable and most excellent cook-book and family cyclopedia, well indexed, and containing a variety of the best methods of preparing all kinds of dishes, drinks, ices, creams, etc. etc., that come to the table, including a full department of invalid cookery, etc. By Miss. E. Neill.

Price in cloth with gilt side and back stamp, $1.00
Paper cover 35

Sam Jones' Anecdotes.—300 Pages.—An exceedingly entertaining and entertaining volume, containing the many telling and effective stories told by Mr. Jones in his sermons. They strike in all directions, and always impart good moral lessons that cannot be misunderstood. Adapted for the young and old. A book which everybody can enjoy.

Price in cloth with gilt side and back stamp, $1.00
Paper cover 35

CALIFORNIA FRUITS AND HOW TO Grow Them. A manual of methods, with lists of varieties best adapted to the different districts, by Edward J. Wickson, A. M. Practical, explicit, comprehensive, embodying the experience of hundreds of growers. Large octavo—575 pages, fully illustrated. Price, $3.00, post paid.

BOTANISTS.

WE desire a few more reliable collectors of native West American tree and flower seeds, bulbs, ferns, cacti and other plants.

Please write us what you can collect, season of supply, prices, and descriptions of those most desirable for cultivation.

THE ORCUTT SEED & PLANT CO.,
San Diego, California.

PRACTICAL BOOKS

—ON—

ARCHITECTURE, DRAWING, ETC.

View from S.W

PRACTICAL DRAWING BOOKS.

Ames' Alphabets.

(Fourth Revised Edition.) Adapted to the use of Architects, Engravers, Engineers, Artists, Sign Painters, Draughtsmen, etc. This work has been prepared with especial reference to the wants of Architects, Sign Painters and Draughtsmen. Architects will find examples of the most common words in use on their drawings, so that if desired they may be transferred directly to their drawings, "with instructions in regard to tracing and transferring, and the preparation of India Ink." This will be especially valuable to architectural students and amateurs. Sign painters will find fancy and shaded letters especially adapted to their wants, while every alphabet in the book will be found suggestive. One oblong volume, thirty-three 7x11 well-filled plates handsomely bound in cloth. Price $1.50

Camp's Draughtsman's Manual;

or, How Can I Learn Architecture? By F. T. Camp. Containing Hints to Inquirers and Directions in Draughtsmanship. Contents: Introduction; Preliminary Words; Draughtsman's Outfit; Technics of Planning; General Remarks on Planning; General Remarks on Exteriors; Drawing the Plan; Using the Instruments; Designing the Elevations; Tracing and Inking; Proportion of Rooms. New, Revised and Enlarged Edition. One small volume, cloth. Price.....50 cts.

A Practical Book on Perspective.

Architectural Perspective for Beginners. By F. A. Wright, Architect. Containing 11 large plates, and full descriptive letter-press. One large quarto (page the size of Building), handsomely bound in cloth. Price.....$3.00

Perspective.

(*Just out.*) By A. L. Cone. A Series of Practical Lessons beginning with Elementary Principles and Carrying the Student through a Thorough Course in Perspective. 33 illustrations. One 12mo volume, cloth. Price.....$1.00

Tuthill's Practical Lessons in Architectural Drawing;

or, How to Make the Working Drawings for Buildings. By Wm. B. Tuthill, A. M., Architect. 5th edition, 44 pages descriptive letter-press, illustrated by 33 full-page plates (one in colors) and 33 wood cuts, showing methods of construction and representation. One large 8vo volume, oblong, cloth. Price $2.50

HOUSE PLANS.

Cottages;

or, Hints on Economical Building, Containing 24 plates of Medium and Low Cost Houses, contributed by different New York Architects, together with descriptive letter-press, giving Practical Hints on Economical Building and a chapter on the Water Supply, Drainage, Sewerage, Heat and Ventilation and other Sanitary Questions Relating to Country Houses. By Wm. Paul Gerhard. Compiled and Edited by A. W. Brunner, Architect. One 8vo volume, cloth. Price.....$1.00

Interior Decoration.

Containing, besides, introductory remarks, Chapters on The Hall, The Staircase, The Library, The Parlor, The Dining-room, The Study, The Bedrooms. Fully Illustrated with 65 Drawings. Price..... $3.00

Interior Wood-work of Houses of Moderate Cost.

—Two China Closets; Details of China Closet; An Angle Fire-place and Parlor Mantel, with Details; Book-shelves, with Details; Staircase and Screen, with Details; Two Bedroom Mantels, with Details; Entrance Hall and Staircase; Details of Entrance Hall and Staircase; Bath-room, with Details; Hall Fire-place, with Details; Library Book-shelves, with Details; Dining-room Mantel, with Details One paper portfolio, 12 plates. Price $1.00

City Houses.

The designs here presented were many of them the result of a competition, and show a large number of plans and many excellent fronts. One paper portfolio, 12 plates. Price.....$1.00

Houses, Low Cost.

Including Prize Designs, with Elevations, Plans, Details, Specifications, Bills of Materials and Estimates of Cost. 12 large (11x14) Plates of Practical Designs, costing from $500 to $3,000. Price.... ..... $1.00

Notes on the Art of House Planning.

By C. Francis Osborne, Architect, Assistant Professor of Architecture, Cornell University. One volume, 12mo, cloth. Price.....$1.00

Houses from $500 to $2,500.

Giving Perspectives, Elevations and Plans, with Specifications, Bills of Materials and Estimates of Cost. One paper portfolio, 12 plates. Price, postpaid.....$1.00

The Suburban Cottage;

Its Design and Construction. By W. B. Tuthill, Architect. One 8vo volume, cloth. 117 illustrations. Contents: Chap. I.—The Plan; its Designs and Requirements. Chap. II.—Elevations. Chap. III.—Masonry and Brick-work. Chap. IV.—Framing. Chap. V.—The Roof. Chap. VI.—General Details. Chap. VII.—Plastering. Chap. VIII.—Plumbing. Price.....$1.50

STORES.

Store Fronts and Interior Details.

12 plates and Descriptive Letter-press.

Store Fittings.

Counter and Showcase, with Plate Details; Detached Case, with Details; Wall-shelving, with Details; Telephone Case, with Details; Counter for Druggist, with Details; Wall Cases, with Details; Two Counters, with Details; Two Detached Cases, with Details; Prescription Counter, with Details; Perfumery Case, with Details; Wall-shelving, with Details; Cashier's Desk, with Details. One paper portfolio, 12 plates. Price.....$1.00

CALIFORNIA

TREES AND FLOWERS.

Descriptions of the Wild Flowers, Ornamental Trees and Shrubs, Ferns, Lilies and Cacti, with other information.

ILLUSTRATED.

The Choicest Seeds and Plants are ours--
and may be yours.

SAN DIEGO, CALIFORNIA:
THE ORCUTT SEED AND PLANT COMPANY, CORNER FIFTH AND C STREETS.
1891.

Price, 10 Cents.

West American Ferns.

The ferns of Southern California are especially noted for their beauty and grace. We collect the roots of these in the summer, when nearly all are perfectly dry, and they are then sent by mail or express in that condition. They require careful treatment, but are well worth the care. Prices are per 100 roots, carefully packed. It is impossible for us to secure all the following species every year; those marked with an asterisk (*), however, are especially recommended and can generally be supplied with promptness. Collection of ten, our choice, for $1.00, postpaid.

	Per 100
*ADIANTUM EMARGINATUM.—Can be sent either dry or in a growing state	$ 6 00
*ASPIDIUM MUNITUM.—Can be sent only in a growing condition	15 00
*ASPLENIUM TRICHOMANE SVAR. INCISUN.—Feather fern. Choice	10 00
*CHEILANTHES CALIFORNICA.—Lace fern. Exquisite	10 00
CHEILANTHES CLEVELANDI.—Clevelan l's Lip fern	9 00
CHEILANTHES GRACILLIMA.—Graceful Lip fern	5 00
CHEILANTHES VISCIDA.—Desert Tea fern	10 00
CHEILANTHES MYRIOPHYLLA.—Fendler's Lip fern	10 00
*GYMNOGRAMME TRIANGULARIS.—California Gold fern	4 00
*GYMNOGRAMME TRIANGULARIS VAR. VISCOSA.—Silver fern	4 00
NOTHOLAENA CRETACEA.—Formerly known as N. candida	10 00
*NOTHOLAENA NEWBERRYI.—Cotton fern. Very pretty	6 00
NOTHOLAENA PARRYI.—Dr Parry's cloak fern. Colorado Desert, rare	20 00
*PELAEA ANDROMEDIAEFOLIA.—Cliff brake Wire fern	6 00
PELAEA DENSA.—A pretty alpine species, three to six inches in height; abundant in Yosemite Valley	6 00
*PELAEA ORNITHOPUS—Tea fern. Easily grown	4 00
PELAEA BREWERI—An alpine species, growing six inches or less in height, in clefts of rocks	6 00
PHEGOPTERIS ALPESTRIS.—A fine alpine species. attaining a height of two feet, from Oregon	10 00
POLYPODIUM CALIFORNICUM.—Californian polypody. Large	5 00
WOODWARDIA RADICANS.—Chain fern. The immense fronds of this luxuriant fern sometimes measure ten feet in height	12 00
SELAGINELLA LEPIDOPHYLLA.—Resurrection plant. Mexico	4 00

The Orcutt Seed and Plant Co.

SAN DIEGO, CALIFORNIA.

C. R. DAUER, President. F. A. SCHUEBEL, Vice-Pres. R. BREESE, Manager.
C. N. FLATTERY, Secretary. T. P. SIMPSON.

San Diego Undertaking Company.

Funeral Directors and Embalmers. Satisfaction Guaranteed in Every Particular. Night Bell at Office. Telephone 139.

758 and 760 FOURTH STREET, - - SAN DIEGO, CAL.

CALIFORNIA SAVINGS BANK,

OF SAN DIEGO.

CAPITAL, - - $250,000.

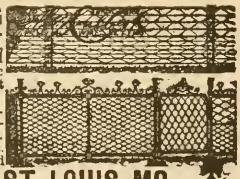
S. G. Havermale, Pres. F. T. Hill, Cashier.

DIRECTORS: J. W. Collins, S. G. Havermale, Wm. Collier, D. D. Dare and F. T. Hill.

Money loaned on real estate. Open Saturday evenings from 7 to 8 p. m. 6 per cent interest allowed on term deposits. Safety deposit boxes in fire proof vaults for rent by the month or year. Special rates to depositors.

Don't BUY FENCING

Until you get our Price List of Ornamental and Farm Fences, Gates, Iron Posts, Tree Guards, Barbed and plain Wire, Nettings, Wire-work, &c. Hulbert Field Loom for both Picket and Netting Fences only $ 5. Galvanized Steel fence lasts forever. Donations for churches and cemeteries. Your name on gates. Catalogue free; write for estimates. We ship everywhere. Agents wanted.



HULBERT FENCE and WIRE CO. 904 OLIVE ST. **ST. LOUIS, MO.**

Vose & Sons Pianos.

Established 1851.

Among their numerous advantages, we take occasion to mention the following important patents:

The Repeating Action which will compare favorably with the Concert Grand Pianos.

The Capo D'Astro Bar which gives that beautiful singing quality so wanting in other upright Pianos.

The Mouse Proof Pedal which is an absolute protection against mice getting into Pianos and making sad havoc with the felts.

GEO. J. BIRKEL,

Largest Piano House in the South. Agent for San Diego County, Cal. Warerooms, Chadbourne Bldg, 4th St. near C.

DR. D. CAVE,

DENTIST

Office, Cor. Fifth and E Sts., upstairs,

SAN DIEGO.

J. H. NEIMAN, Proprietor.

Brewster Pharmacy,

Brewster Hotel.

Southeast Corner of Fourth and C Streets,

SAN DIEGO, CAL.

Physicians' Prescriptions Carefully Filled.

E. V. VAN NORMAN, M. D.

PHYSICIAN . . .

— AND —

. . . SURGEON.

OFFICE, 927 SIXTH STREET.

Office Hours—10 to 12 a. m., 1 to 3 p. m., and Evenings. Residence, Corner 5th and Maple Streets.

Telephone 174.

SAN DIEGO, CALIFORNIA.

THE FIFTH AVENUE GROCERY.

ESTABLISHED 1877.

THE MODERN STORE OF THE CITY.

Carry a large and complete assortment of goods. Besides being second to none, we are cheaper on prices, quality considered, than any store in the city. Come and trade.

HORACE BRADT, - - 1240-1248 Fifth Street.

FINDLEY BROS.,

The Leading Grocers.

WHOLESALE AND RETAIL.

1318 and 1320 D St.

M. E. Church Block.

Telephone 38. *SAN DIEGO, CAL.*

THE "LION"

The Reliable Clothiers.

Headquarters for Reliable

MEN'S AND BOYS'

WEARING APPAREL.

945 and 947 Fifth St.

SAN DIEGO, - - CAL.

J. S. BUCK,

—IMPORTER AND DEALER IN—

SEWER PIPE!

Terra Cotta Chimneys, Stoneware, Ready Roofing and Building Papers.

ELSINORE POTTERY STORE,

Cor. Fifth and K Streets,

SAN DIEGO, CAL

THE WORLD

Shell and Curio Co.

—DEALER IN—

Marine and Land Shells, Mosses, Ferns

AND ALL KINDS OF

SPECIMENS AND CURIOS.

1045 Fifth Street, between D and C,

SAN DIEGO, CAL.

Particular attention given to supplying Collectors and Museums.

Increase the beauty and convenience of YOUR COLLECTION by using

NEAT LABELS,

Supplied by the OBSERVER, Portland, Ct.

Perfect in quality, and acknowledged *the standard* in size and style. Send for Price List and Samples. Have you seen

THE OBSERVER,

A medium of interchange of observations for all Students and Lovers of Nature, devoted to all departments of Nature Studies. Send for sample copy. Address

EDWARD F. BIGELOW,

Publisher and Printer,

No. 5 Waverly Avenue, Portland, Conn.

HOME FOR INVALIDS.

1121 Columbia street, between Ash and Beech. This Institution is under the supervision of professional nurses. Country patients can find pleasant rooms and careful attention during sickness. Terms moderate. All correspondence strictly confidential.

"SHEP, The Hatter."

Hats Cleaned, Pressed, Trimmed and Dyed. Also Silk Hats Cleaned and Ironed.

W. M. SHEPARD,

911 FIFTH STREET.

JOSEPH RODES, M. D.

General Medicine and Surgery.

Special Attention to Diseases of the Eye Ear, Nose and Throat.

OFFICE: Southwest corner Sixth and D streets, Bon Ton block; Rooms 3, 4, 5 and 6.
OFFICE HOURS: 9 to 12 a. m., 2 to 5:30 p. m.; Sundays, 9 to 11 a. m.
TELEPHONES: Office, 141, one ring; House, 141, three rings.
RESIDENCE: Fifth street, above Spruce.

Telephone 159.

DR. W. S. READ,

DENTIST

Pierce-Morse Block, Rooms 7 to 10,

F Street, Cor. Sixth, San Diego.

Frandzen, Bumgardner & Co.

PRINTERS.

BINDING AND RULING,
BLANK BOOKS,
LITHOGRAPHING,
ENGRAVING, ETC.

832-36 FOURTH STREET.

Telephone 180.

Connecticut Mutual

Life Insurance Co.

OF HARTFORD, CONN.

Assets, - - $58,747,707.44.

With this company's well-known economical management and the unequaled security offered, it furnishes the safest and cheapest insurance in the world.

JEFF WILLIAMS, Agent.

922 Fifth Street, - - SAN DIEGO, CAL.

The Great American

Importing Tea Co.

Importers and dealers in

Pure Teas, Coffees and Spices.

969 Fifth Street, Near D,

SAN DIEGO, CALIFORNIA.

Forty Branch Stores in successful operation.

For Good Barber Work,

—GO TO—

MARK'S SHOP.

1333 D Street, - SAN DIEGO, CAL.
Bootblack Stand in Front.

Electrical Supplies.

BELLS, BATTERIES, WIRE, ANNUNCIATORS, ETC.

Incandescent Light Wiring a Specialty.

F. S. HARTWELL,
ELECTRICIAN,
924 6th St.,
San Diego, - California.

TUESDAY, 9th June.

Chapter XXIV.

When you buy life insurance you try hard to select the line that will give you the greatest return. Why not use the same discretion when you buy shoes?

Some shoes make you spend more money for their kind, in one year, than others do in two.

Some shoes help to pay for the next pair you buy.

If you are not already wearing "H. & R." dependable shoes, you ought to be.

Make your money earn money.

(Signed),

Havermale & Rossier,

THE SHOEMEN.

1427 D St., bet. Fifth & Sixth, Bon Ton block.

PHILIPS & HARBISON,

DENTISTS.

Office cor. Sixth & D Sts., SAN DIEGO, CAL.

We guarantee first-class work.

SPRING OPENING

—AT—

JOE POHEIM'S

THE TAILOR.

Just received a large line of the latest spring suitings and trouserings Will make to order at prices within the reach of all:

Scotch Tweed and Cassimere Suitings.	$25 00
Blue and Black Cheviot Suitings	25 00
English Serge Cheviot Suitings	30 00
Fancy Silk-mixed Cassimere Suitings..	32 50
English Clog Worsted Suitings	35 00
French Pique Suitings.....	35 00
Melton and Kersey Overcoats, silk-lined	30 00

Pants to order from $6 up.

Call and examine our stock. No trouble to show goods. JOE POHEIM,

The Tailor, 916 Fifth street.

JOSEPH GILLOTT'S

Steel Pens

FOR ARTISTIC USE in fine drawing, Nos. 659 (Crowquill), 290 and 291.

FOR FINE WRITING, Nos 303 and Ladies', 170.

FOR BROAD WRITING, Nos. 294, 389 and Stub Point, 849.

FOR GENERAL WRITING, Nos 332, 404, 390 and 604.

Joseph Gillott & Sons, 91 John St., N. Y.

HENRY HOE, SOLE AGENT.

Sold by ALL DEALERS throughout the World.

Gold Medal Paris Exposition, 1878.

FREE OUR NEW $85 Solid Gold Watch FREE. Worth $100.00. best $85 watch in the world Perfect timekeeper Warranted heavy. SOLID GOLD hunting cases Both ladies' and gent's sizes, with works and cases of equal value ONE PERSON in each locality can secure one **free**, together with our large and valuable line of **Household Samples.** These samples, as well as the watch, are **free.** All the work you need do is to show what we send you to those who call—your friends and neighbors and those about you—that always results in valuable trade for us, which holds for years when once started, and thus we are repaid. We pay all express, freight, etc. After you know all, if you would like to go to work for us, you can earn from **$20** to **$60** per week and upwards. Address, **Stinson & Co., Box 812, Portland, Maine.**

One of the BEST Telescopes in the world. Our facilities are unequaled, and to introduce our superior goods we will send FREE to ONE PERSON in each locality, as above. Only those who write to us at once can make sure of the chance. All you have to do in return is to show our goods to those who call—your neighbors and those around you. The beginning of this advertisement shows the small end of the telescope. The following cut gives the appearance of it reduced to

about the fiftieth part of its bulk. It is a grand, double size telescope, as large as is easy to carry. We will also show you how you can make from **$3** to **$10** a day at least, from the start, without experience. Better write at once. We pay all express charges. Address, H. HALLETT & CO., Box **880,** PORTLAND, MAINE.

Two Excellent Papers.

THE LOS ANGELES EVENING and WEEKLY EXPRESS should be read by every one in Southern California who wants a good daily or weekly paper. The daily contains full Associated Press dispatches for the current day, or about two-thirds of the reports which appear in the next morning's (Los Angeles) papers. It also contains the latest general and local news and special articles on current topics. The weekly is the cheapest and best in Southern California and has the largest circulation. Sample copies of the daily or weekly sent free to any postoffice in the United States or British America.

WHAT I WANT IN MY WEEKLY PAPER.

I WANT
A reliable paper that I can
Safely take into my family.

I WANT
A paper which represents High Ideals
And Sound Principles.

I WANT
The latest Home News,
The latest Foreign News,
The Latest Political News.

I WANT
Reliable Market Reports,
Reliable quotations of Farm Products,
Live Stock Markets, Financial & Commercial.

I WANT
Sensible and seasonable Editorials
On Political, Social, and Moral Questions.

I WANT
The cream of the best Editorials
In New York and other daily and weekly papers
To let me know what they think of matters.

I WANT
Good, reliable Farm and Garden Articles
Written by Practical Men.

I WANT
To know something of the Home Life of
The American people, and of their
Life, thoughts, and experiences.

I WANT
Pleasant moral stories for the Young People,
That the children may look for the paper
As they do for a friend.

I WANT
Stories of Interest for us Elders,
For we, too, like our hours of leisure.

THIS IS WHAT I DON'T WANT:

I DON'T WANT
Long, padded News Articles;
The padding doesn't add to the value,
And I haven't time to read them.

I DON'T WANT
Fierce, one-sided Editorials,
Written by special pleaders,
Who can see nothing good
In any side but their own.

NOW, WHAT PAPER WILL FILL THE BILL?

WE ANSWER:

THE NEW YORK WEEKLY WITNESS

EVERY TIME.

☞ *ONLY $1 A YEAR.* ☜

The WITNESS is just the paper for Farmers, Farmers' Wives, Farmers' Sons, Farmers' Daughters, Country Merchants, Country Store-keepers, Blacksmiths, Carpenters, Builders, Stone Masons, and all other laborers, who form the backbone of our Country and who want to be thoroughly posted in what is going on in the World.

The WITNESS offers one of the most valuable premium lists of any paper in America. Every article guaranteed and away below retail prices. Send for a free copy.

Sample copies sent free to any address.
Address

JOHN DOUGALL & CO.,

150 Nassau St., New York.

Telephone 201 for Drugs.

Prompt Free Delivery to any part of the city.

KNOX & VAN HAREN,

Prescription Druggists.

Cor. Sixth and D Sts., SAN DIEGO.

We have in stock everything usually found in a first-class drug store.

P. O. Box 935.

M. A. WERTHEIMER & CO.

STATIONERS,

Booksellers, Paper Dealers

And School Furnishers.

762 FIFTH STREET,

SAN DIEGO.

LLEWELYN'S SHOE STORE

Is the best place in San Diego to buy your

BOOTS & SHOES.

All kinds and qualities at Eastern prices.

LLEWELYN, 728 5th St., bet. F & G.

HENRY C. LANGREHR,

COUNTY SURVEYOR.

Homestead, Timber Culture, and Entries and Filings Made Railroad, Water Supply and Irrigation Location and Construction, etc., Maps, Plans and Estimates Furnished.

1313 D STREET, SAN DIEGO, CAL.

P. O. Box 844.

THE REFLECTOR

Published by the Laurean and Eutaxian Societies of the STATE UNIVERSITY OF OREGON. Issued monthly during the school year. Address

E. H. LAUER, - Business Manager.

EUGENE, OREGON.

SCHILLER & MURTHA,

THE LEADING

DRY GOODS

—AND—

CLOTHING HOUSE.

San Diego, Corner Fifth and H,

600 TO 612.

Mrs. M. B. Averill, M. D.

OFFICE AT THE

Homœpathic Pharmacy,

946 Sixth Street, - SAN DIEGO.

RESIDENCE:

1934 F STREET,

Between Tenth and Eleventh.

Gives special attention to office practice and diseases of women and children.

RANKIN & CO.

Artists in Photography

EUGENE, OREGON.

Old and faded pictures enlarged to life-size and finished in India Ink, Water Colors or Crayon equal to the best done anywhere and at reasonable rates

Instantaneous Pictures of children a successful specialty.

IPOMEA MORTONII.

The Ipomea Mortonii looks more like a woodbine than a morning glory, the leaf being a fine specimen of a deeply-cut palmate leaf. The foliage is a very glossy dark green and always free from any pest or scale at any time of the year. The blossom is a dark lavender morning glory, three inches in diameter, but the blooming is scarce rather than profuse as with many of the Ipomeas.

It is without exception the fastest growing vine that I have known and being an evergreen perennial is most desirable. For those living in rented houses, and yet anxious to make the surroundings attractive, no vine can excel this "Jack the Beanstalk" for covering sheds, barns, fences, trellises or porches. A vine but three months old has sent out runners over twenty feet long, and is a thick mass of foliage for more than six feet wide.

Specimens of this attractive and useful vine can be seen at the San Diego Nursery, corner Fifth and C streets, San Diego.

Or a strong plant will be mailed to any address on receipt of 25 cents. Address

MISS K. O. SESSIONS.

P. O. Box 713. San Diego, Cal.

CALIFORNIA NATIONAL BANK

Of San Diego.

Capital Paid up, - - $500,000
Surplus and Profits, - - 100,000

DIRECTORS:

J. W. COLLINS, President. DAVID D. DARE, Vice-President.
S. G. HAVERMALE, 2d Vice-Pres. G. N. O'BRIEN, Cashier.
E. F. PULSIFER, T. R. GAY,
J. W. BURNS, WM. COLLIER.

HOTEL BREWSTER,

The most elegantly furnished and equipped hotel in Southern California.
The only hotel in San Diego having a passenger and baggage elevator.

Strictly First Class.

SPECIAL ACCOMMODATIONS FOR COMMERCIAL TRAVELERS.

RATES FROM $2.50 UP.

Corner Fourth and C Streets,
SAN DIEGO.

Hotel Brewster Co.

J. E. O'BRIEN, Manager.

Santa Fé Route.

The Southern California

RAILWAY COMPANY.

The Most Direct

And Comfortable route between the Pacific Coast and the East, because it is many miles shorter and runs the finest trains **through** from **San Diego** and **Los Angeles** to **Chicago** every day in the year.

Excursions Personally Conducted.

The Pullman Tourist Sleeping Cars carrying these parties are run **through** in both directions.

Our Special Conductors accompanying these parties care for the passengers, look after their baggage, assist ladies, children, the aged and the infirm, and do all in their power to relieve passengers from anxiety in regard to the details of the journey. Second-class tickets are honored on these Excursions, and as the rates are much less than in the Pullman Palace Sleeping Cars for sleeping accommodations, a considerable saving in expense is made possible.

The Southern California Railway,

With its numerous lines and branches reaches all the principal points of interest in Southern California, including the Coast Resorts.

It is the only line between LOS ANGELES and SAN DIEGO, LOS ANGELES and RIVERSIDE, and LOS ANGELES and SAN BERNARDINO, and runs through trains between the above points with reclining chair cars between Los Angeles and San Diego.

K. H. WADE, General Manager.....Los Angeles, Cal.
W. F. WHITE, Passenger Traffic Manager.....Chicago, Ills.
S. B. HYNES, General Passenger Agent.....Los Angeles, Cal.
H. K. GREGORY, Assistant Gen'l Passenger Ag't..Los Angeles, Cal.

SMITHSONIAN INSTITUTION LIBRARIES
3 9088 01425 0914

West American Scientist

V. 7 (whole no 62)
Sept. 1891